

AD

COOPERATIVE AGREEMENT NUMBER DAMD17-95-2-5016

TITLE: Support of USARIEM Postpartum Soldier Research Study

PRINCIPAL INVESTIGATOR: COL Joseph Dettori

CONTRACTING ORGANIZATION: The Henry M. Jackson Foundation  
Rockville, Maryland 20852

REPORT DATE: September 1997

TYPE OF REPORT: Final

PREPARED FOR: U.S. Army Medical Research and Materiel Command  
Fort Detrick, Maryland 21702-5012

DISTRIBUTION STATEMENT: Approved for public release;  
distribution unlimited

The views, opinions and/or findings contained in this report are  
those of the author(s) and should not be construed as an official  
Department of the Army position, policy or decision unless so  
designated by other documentation.

**REPORT DOCUMENTATION PAGE**

*Form Approved*  
OMB No. 0704-0188

Gathering reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-1302, and to the Office of Management and Budget, Paperwork Reduction Project (0704-0188), Washington, DC 20503.

1. AGENCY USE ONLY <i>(Leave blank)</i>	2. REPORT DATE September 1997	3. REPORT TYPE AND DATES COVERED Final (10 Jul 95 - 30 Sep 97)	
4. TITLE AND SUBTITLE Support of USARIEM Postpartum Soldier Research Study		5. FUNDING NUMBERS DAMD17-95-2-5016	
6. AUTHOR(S) Dettori, Joseph R., COL Cline, Alana, LTC (RET) Smith, Paul, COL (RET)		Westphal, Kathleen A., LTC (RET) Pusateri, Anthony, CPT Patience, Troy H.	
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) Henry M. Jackson Foundation Rockville, Maryland 20852		8. PERFORMING ORGANIZATION REPORT NUMBER	
9. SPONSORING / MONITORING AGENCY NAME(S) AND ADDRESS(ES) U.S. Army Medical Research and Materiel Command Fort Detrick, Maryland 21702-5012		10. SPONSORING / MONITORING AGENCY REPORT NUMBER	
11. SUPPLEMENTARY NOTES		<b>19990728 015</b>	
12a. DISTRIBUTION / AVAILABILITY STATEMENT Approved for public release; distribution unlimited		12b. DISTRIBUTION CODE	
13. ABSTRACT <i>(Maximum 200 words)</i> Pregnant and postpartum soldiers have unique needs that require adjustments in the demands placed on them in a military environment. This prospective cohort study was undertaken to examine the effects of pregnancy on the health, fitness and nutritional status of postpartum soldiers. We studied 468 females in three different groups: a nonpregnant active duty group (NPAD, n=215), a postpartum family member group (PPFM, n=126), and a postpartum active duty group (PPAD, n=127). Subjects underwent blood draws to assess iron, folate and calcium status; anthropometric measurements to determine body composition; and dual energy x-ray absorptiometry to measure bone mineral density. Questionnaires were administered to capture demographic data, health habits and nutritional intake. In addition, we assessed soldier fitness using scores from their semi-annual Army Physical Fitness Test immediately prior to study entry and 6-9 months later. We reviewed medical records of active duty subjects between 1 January 1992 and study termination to calculate injury and illness rates at baseline (preconception), and during the various phases of postpartum recovery. Comparisons were made between the two active duty groups and the two pregnant groups.			
14. SUBJECT TERMS Defense Women's Health Research Program		15. NUMBER OF PAGES 133	
		16. PRICE CODE	
17. SECURITY CLASSIFICATION OF REPORT Unclassified	18. SECURITY CLASSIFICATION OF THIS PAGE Unclassified	19. SECURITY CLASSIFICATION OF ABSTRACT Unclassified	20. LIMITATION OF ABSTRACT Unlimited

## FOREWORD

Opinions, interpretations, conclusions and recommendations are those of the author and are not necessarily endorsed by the U.S. Army.

       Where copyrighted material is quoted, permission has been obtained to use such material.

       Where material from documents designated for limited distribution is quoted, permission has been obtained to use the material.

       Citations of commercial organizations and trade names in this report do not constitute an official Department of Army endorsement or approval of the products or services of these organizations.

       In conducting research using animals, the investigator(s) adhered to the "Guide for the Care and Use of Laboratory Animals," prepared by the Committee on Care and use of Laboratory Animals of the Institute of Laboratory Resources, national Research Council (NIH Publication No. 86-23, Revised 1985).

Al For the protection of human subjects, the investigator(s) adhered to policies of applicable Federal Law 45 CFR 46.

       In conducting research utilizing recombinant DNA technology, the investigator(s) adhered to current guidelines promulgated by the National Institutes of Health.

       In the conduct of research utilizing recombinant DNA, the investigator(s) adhered to the NIH Guidelines for Research Involving Recombinant DNA Molecules.

       In the conduct of research involving hazardous organisms, the investigator(s) adhered to the CDC-NIH Guide for Biosafety in Microbiological and Biomedical Laboratories.

  
\_\_\_\_\_  
PI - Signature

  
\_\_\_\_\_  
Date

## TABLE OF CONTENTS

	<u>Page</u>
Cover Sheet .....	1
SF 298 .....	2
Foreword .....	3
Table of Contents .....	4
List of Figures .....	5
List of Tables .....	7
Acknowledgments .....	9
Introduction .....	11
Purpose .....	18
Body .....	19
Results and Discussion .....	29
Conclusions .....	61
Recommendations .....	63
References .....	64
Appendices	
1. Fitness stratified by race .....	68
2. Bone mineral density stratified by group and lactation .....	70
3. Change in bone mineral density .....	72
4. Serum albumin concentrations .....	73
5. Correlation between DEXA and US Army tape method for determining body fat .....	74
6. Questionnaires .....	76

## LIST OF FIGURES

	<u>Page</u>
Figure 1. Time periods for different stages of postpartum recovery.	22
Figure 2. Number of pushups performed at the pre-pregnancy and postpartum APFT.	31
Figure 3. Number of sit-ups performed at the pre-pregnancy and postpartum APFT.	31
Figure 4. Length of time (seconds) to complete the 2 mile run performed at the pre-pregnancy and postpartum APFT.	32
Figure 5. Proportion of female soldiers who return to their pre-pregnancy two mile run time at their first postpartum APFT.	33
Figure 6. Number of pushups for smokers and non-smokers at the pre-pregnancy, PU1, ( $p=0.0027$ ) and postpartum, PU5, ( $p<0.0001$ ) APFT.	34
Figure 7. Number of sit-ups for smokers and non-smokers at the pre-pregnancy, SU1, ( $p=0.0027$ ) and postpartum, SU5, ( $p<0.0001$ ) APFT.	34
Figure 8. Run times for smokers and non-smokers at the pre-pregnancy, Run1, ( $p=0.0027$ ) and postpartum, Run5, ( $p<0.0001$ ) APFT.	35
Figure 9. Body weight (pounds) for the three groups pre-pregnancy (baseline), immediately postpartum and 6-9 months postpartum.	40
Figure 10. Percent body fat (measured by circumferential taping) for the three groups pre-pregnancy (baseline), immediately postpartum and 6-9 months postpartum.	40
Figure 11. BMD for the full body, lumbar spine, and femoral neck at two time periods; period 1, immediately postpartum and period 2, 6-9 months postpartum.	42
Figure 12. Change in full body BMD in postpartum women who were breastfeeding at least 25% of the time at 6-9 months.	42
Figure 13. Change in lumbar spine BMD in postpartum women who were breastfeeding at least 25% of the time at 6-9 months.	43
Figure 14. Change in full body BMD in postpartum women who were breastfeeding at least 25% of the time at 6-9 months.	43
Figure 15. Serum Calcium concentrations for all treatment groups at each phase of follow-up.	44

	<u>Page</u>
Figure 16. Serum phosphorus concentrations for all treatment groups at each phase of follow-up.	45
Figure 17. Serum parathyroid hormone concentrations for all treatment groups at each phase of follow-up.	46
Figure 18. Serum 1,25 (OH)2-vitamin D concentrations for all treatment groups at each phase of follow-up.	47
Figure 19. Urinary deoxypyridinoline (DPD) concentrations for all treatment groups at each phase of follow-up.	48
Figure 20. Urinary Calcium concentrations for all treatment groups at each phase of follow-up.	48
Figure 21. Urinary Phosphorus concentrations for all treatment groups at each phase of follow-up.	49
Figure 22. Urinary Creatinine concentrations for all treatment groups at each phase of follow-up.	50
Figure 23. Serum Iron concentrations for all treatment groups at each phase of follow-up.	52
Figure 24. Serum Ferritin concentrations for all treatment groups at each phase of follow-up.	53
Figure 25. Total Iron Binding Capacity (TIBC) concentrations for all treatment groups at each phase of follow-up.	54
Figure 26. Serum Transferrin concentrations for all treatment groups at each phase of follow-up.	55
Figure 27. Transferrin Saturation concentrations for all treatment groups at each phase of follow-up.	56
Figure 28. Serum Folate concentrations for all treatment groups at each phase of follow-up.	57
Figure 29. Serum Vitamin B-12 concentrations for all treatment groups at each phase of follow-up.	57

## LIST OF TABLES

	<u>Page</u>
Table 1. Summary of military studies reporting low levels of fitness as a risk factor for injury.	13
Table 2. Recommended total weight gain ranges for pregnant women by pre-pregnant body mass index (BMI)(kg/m <sup>2</sup> ).	13
Table 3. Recommended dietary allowances for pre-pregnant, pregnant and lactating women 15-25+ years old.	15
Table 4. Number of subjects who submitted to initial data collection.	20
Table 5. Collection points for various outcome measures.	21
Table 6. Assays and the site of analyses.	25
Table 7. Sample size for major outcome measure over four time periods.	25
Table 8. Number of subjects by study group who failed to complete the study.	26
Table 9. Demographic data.	29
Table 10. Range of days allowed for a follow-up visit in each phase.	30
Table 11. Percent failure at APFT 1 (pre-pregnancy period) and at APFT 2 (6-9 postpartum) for each event.	32
Table 12. Injury rates, rate ratios and 95% confidence intervals for Army women during baseline, pregnancy and the postpartum period.	36
Table 13. Time-lost injury rates, rate ratios and 95% confidence intervals for army women during baseline, pregnancy and the postpartum period.	36
Table 14. Frequency distribution for injury diagnosis.	37
Table 15. Illness rates, rate ratios and 95% confidence intervals for Army women during baseline, pregnancy and the postpartum period.	37
Table 16. Time-lost illness rates, rate ratios and 95% confidence intervals for Army women during baseline, pregnancy and the postpartum period.	38
Table 17. Frequency distribution for illness diagnosis.	39
Table 18. Percent overweight and overfat by US Army standards prior to pregnancy and 6-9 months postpartum.	41

	<u>Page</u>
Table 19. Self reported nutritional intake during the postpartum period in active duty soldiers and family members.	60

## **ACKNOWLEDGMENTS**

A study of this size requires the assistance of many individuals, beginning with the study formulation, continuing with the implementation and finishing with this final product. To all who have assisted in the endeavor, we are grateful.

In the planning, three individuals provided immeasurable assistance and wise counsel. Most notable was COL Bruce Jones, MD, whose sound advice concerning the construction of the questionnaire and the technique of collecting injury and fitness data proved extremely helpful. We wish to thank Phil Lavin, PhD, for his input to our final study design. Finally, special thanks is extended to James Vogel, PhD, whose mentorship, leadership and support made this project possible.

This project extended over three years and proved to test the patience and endurance of those who collected the data. Foremost, we would like to express a special thanks to Rex Hoyt who served as the overall coordinator for the data collection. The success of this project, in many ways, can be attributed largely to his endless hours of devotion to this study. We willingly acknowledge our indebtedness to him.

Over the course of the three years, several individuals worked full time or part time on this project. Those who deserve special recognition are Karen Williamson (who proved invaluable at study startup and during the first two years), and Daniel Yancey who took Karen's place. Others who contributed significantly include Sue Chambers, Jennifer Stegman, Kathleen Kirin, Adena Stewart, Danielle DeKoker, Jennifer Wilson, Jason Dettori, Nathan Dettori, Elizabeth Dettori and Brooke Allison

The management of data for a project this size is no easy feat. This task fell to Troy Patience, Computer Specialist, Madigan Army Medical Center, who pulled the data together, admirably. His endless effort before, during and after the duty day deserves special recognition and thanks. The principle investigator wants to publicly acknowledge Troy's talent and ability. We were fortunate to have him working on the project.

Finally, we want to acknowledge the work of Susan McGraw who scanned and cleaned all the food frequency data and Jennifer Rood, PhD, who coordinated the blood assay reporting from Pennington Labs, Baton Rouge, LA.

## **INTRODUCTION**

The percentage of females in the military services has steadily increased since the enactment of Public Law 90-130 in 1967. Currently, women comprise 13.7% of all active duty military personnel (197,529 women) and 14.5% of all Army personnel (70,087 women) (1). Among these women, it has been estimated that approximately 10% of military females and 9% of Army females are pregnant at any one time (2). This large cohort of pregnant and postpartum service members has unique needs that may require adjustments in the demands placed on it in a military environment.

### **Fitness**

Some allowances, particularly as they relate to fitness training, have been made for service members during the postpartum period. In the Army, prior to 1996, postpartum soldiers received 42 days of convalescent leave (CVL) and then return to their military job without limitations. They performed physical training (PT), not at the same pace and distances of the soldiers in their unit, but at their own pace and distance (Army Regulations (AR) 40-501, Field Manual 21-20; 40-501) for the next 90 days. One hundred thirty-five days following delivery, the postpartum soldier was expected to meet the weight/body fat standards outlined in AR 600-9, as well as pass the Army Physical Fitness Test (APFT) required of all soldiers. Starting in 1996, these requirements to return to unit PT and to meet the APFT/body fat standards were extended to six months. The expectations for work performance, fitness and body weight/fat standards have never been scientifically examined to determine if they are achievable for the postpartum population. Thus far, no one has determined when postpartum women, either military or civilian, return to their pre-pregnancy work capacity or fitness level.

Differences in aerobic capacity between the pregnant and postpartum state have been examined(3-5). Generally, women demonstrate little or no difference in oxygen uptake or aerobic capacity during submaximal exercise when comparing their pregnant and postpartum states(4, 5). As a result of these findings, many have concluded that pregnancy has no adverse effect on fitness in the postpartum

period(3-5). The problem with these studies is that postpartum measures were used as the baseline with the assumption that postpartum fitness matches that of the pre-pregnant state. However, when body composition, energy expenditure and maximal oxygen uptake are measured prior to conception and 8 weeks postpartum, a detraining is noted that is reflected by increased body weight, decreased energy expenditure and lower oxygen uptake compared to the pre-pregnant state(6). In addition, cardiovascular changes in response to pregnancy, such as increased end-diastolic volume, stroke volume and cardiac output, and decreased systemic vascular resistance, carry over into the postpartum period(7).

### **Injury**

The effect of reduced fitness on postpartum soldiers at the time they are required to return to duty is unknown. Training-related injuries, a leading cause of morbidity in the US Army(8-10), are consistently higher in both male and female soldiers who have low levels of physical fitness(8, 10-16). These injuries result in medical clinic visits and time lost from military duties (Table 1). These elevated injury rates may rise further during the puerperium as a result of the negative effect of pregnancy upon fitness.

### **Body Composition**

Until recently, the usual recommendation for pregnancy weight gain in healthy women has been 24 to 28 lbs (11 to 13 kg), with no consideration given to pre-pregnant weight(17). However, the Institute of Medicine (IOM) has now issued guidelines for weight gain based upon pre-pregnancy weight for height (Table 2). Delivery results in an average weight loss of 12 lbs (5.5 kg). Most women lose weight steadily following delivery over the first 3 to 6 months, with the greatest loss in the first 3 months.

Once lactation is begun, moderate dieting to achieve a weight loss of 4.5 lbs/mo (2 kg/mo) has been found to be safe for women who are overweight prior to conception. However, women who are already lean may be at risk for impaired lactation performance if energy intake is <7.53 MJ/d (1800 kcal/d). The Army expects their postpartum soldiers to meet the weight/body fat standards after 135

**Table 1.** Summary Of Military Studies Reporting Low Levels Of Fitness As A Risk Factor For Injury.

AUTHOR	RR*	GENDER	POPULATION
Westphal (1995)(18)	1.55	females	Army Combat Basic Trainees (Ft. Jackson, 1993)
Knapik (1993)(13)	1.60	males	Army infantry soldiers (Ft. Richardson)
Jones (1993)(11)	1.69 2.80	males females	Army Combat Basic Trainees (Ft. Jackson, 1984)
Jones (1993)(10)	1.68	males	Army Combat Basic Trainees (Ft. Benning, 1987)
Kimsey (1993) (12)	2.11 2.44	males females	Marine Basic Trainees (Parris Island)
Bell (1993)(16)	1.95 1.46	males females	Army Combat Basic Trainees (Jackson, 1988)

\*Risk Ratio (RR) is the ratio of the cumulative incidence (%) of injury in the low fitness population (slow run times) compared with the high fitness population (fast run times).

**Table 2.** Recommended Total Weight Gain Ranges For Pregnant Women By Pre-pregnant Body Mass Index (BMI)(kg/m<sup>2</sup>)(17).

WEIGHT-FOR-HEIGHT CATEGORY	RECOMMENDED TOTAL WEIGHT GAIN	
	kg	lb
Low (BMI<19.8)	12.5 - 18	28 - 40
Normal (BMI=19.8 - 26.0)	11.5 - 16.0	25 - 35
High (BMI>26.0)	7.0 - 11.5	15 - 25

days following delivery. That can be a challenge for most lean and some normal weight-for-height females. Much of the literature addressing postpartum weight loss is outdated and limited. Four recent investigations (2 comparing weight loss in the puerperium with first trimester weight(4, 19) and two comparing weight

loss in puerperium with pre-pregnant weight(6, 20) reported a mean net weight gain at 4 weeks(4), at 4-8 weeks(19), at 12-20 weeks(20) and at 6 months(19) postpartum in a variety of populations. The rate of weight loss in postpartum soldiers has not been documented.

### **Calcium and Bone Mineral Status**

Bone status may be negatively affected during pregnancy as a result of changes in calcium homeostasis, reduction in physical activity and lactation. This alteration in bone status may lead to increased incidence of bone-related training injuries such as stress fractures(21). In the third trimester, the maternal system provides approximately 200 mg of calcium per day for fetal development(22). Often, calcium is mobilized from bone to meet this large requirement (22-24). Decreased bone mineral densities due to bone demineralization to meet pregnancy requirements have been noted in susceptible skeletal regions (e.g. lumbar spine, femoral neck) following pregnancy(22).

Reduced physical activity is another factor relevant to bone status in pregnant soldiers. As pregnancy progresses, physical activity and exercise become increasingly difficult. Women who become more sedentary, relative to their pre-pregnant activity state, may reduce the stress placed on their bones and thereby diminish bone strength(25).

Finally, lactation is another factor which may affect bone mineral density. The calcium drain for milk synthesis is large, similar to that for fetal growth during late gestation(24, 26). In addition to the high calcium requirements for milk synthesis, endocrine factors may also negatively affect bone calcium. Lactational amenorrhea may last from three months to over three years, depending on the duration of lactation and pattern of breast feeding(27). During this period, ovarian estrogen production is very low and a state of hypoestrogenemia exists. Hypoestrogenism is a major contributor to bone demineralization(25). Additionally, plasma prolactin concentrations are elevated during lactation(27), a condition that also is associated with bone mineral loss(24).

## **Nutrition**

Recognition of the physiologic demands associated with pregnancy and lactation have resulted in suggested changes in the RDA for certain nutrients and micro nutrients. Table 3 summarizes some of these requirements. There are no values reported for postpartum, non-lactating women as their nutrient requirements are assumed to quickly return to their pre-pregnancy standard.

**Table 3.** Recommended Dietary Allowances For Pre-pregnant, Pregnant And Lactating Women 15-25 Years Old(28, 29).

	Pre-pregnant	Pregnant	Lactating (1-6 mos)
Energy (kcal)	2,220	2,500	2,700
Protein (g)	44-50	60	65
Zinc (mg)	12	15	19
Magnesium (mg)	310-320	350-360	310-320
Calcium (mg)	1000	1000	1000
Selenium (ug)	55	65	75
Vitamin A (ug RE)	800	800	1300
Vitamin C (mg)	60	70	95
Vitamin E (mg)	8	10	12
Niacin (mg)	15	17	20
Iron (mg)	15	30	15
Folate (ug)	180	400	280

Evidence indicates that significant numbers of military women fail to ingest the Recommended Daily Allowances of various nutrients, especially while in a field setting(30). There has been no such documentation, however, for pregnant or postpartum soldiers.

## **Iron Status**

Iron deficiency has been recognized as a major nutritional problem in both developing and institutionalized countries, women being at greater risk for this deficiency than men. Explanations for this difference between the genders are related to the losses of iron experienced by women through monthly menstrual blood loss, as well as a tendency for women to exhibit inadequate dietary iron

intake. It has been reported that the average American diet provides approximately 6-7 mg of iron/1000 kcal(31). This would require a woman to ingest approximately 3000 kcal to acquire the Military Recommended Dietary Allowance (MRDA) of 18 mg of iron. This recommended allowance is increased in the pregnant woman because of fetal and placental requirements, as well as maternal erythropoietic needs and the blood loss associated with delivery. It is estimated that the pregnant woman requires approximately an additional 6 mg of iron/day during the last two trimesters, a need which cannot be reasonably met by diet alone(32). This is the basis for the medical practice of routinely providing iron supplementation during the prenatal and early postpartum period, which generally occurs even in the absence of laboratory evidence of an iron deficiency.

Data from the National Health and Nutrition Examination Survey(33) suggest that about 5 to 10% of women aged 20 to 44 years are iron deficient. The incidence of iron deficiency among the pregnant population is felt to be higher because of increased physiologic demands. Data from the Pregnancy Nutrition Surveillance System indicate that a low hemoglobin level and/or low hematocrit is present in 4% of white women and 13% of black women during the first trimester and in 19% of white women and 38% of black women during the third trimester(34). Others have estimated that a hemoglobin level of less than 110 g/L and a hematocrit of less than 0.32 occurs in one-third to one-half of pregnant women who do not use iron supplements(35). However, the use of supplementation is no guarantee of iron balance if the supplementation is inadequate. Thomsen(36) demonstrated a significant decline in serum ferritin in a group of 21 pregnant women who were receiving daily 18 mg doses of iron supplementation. In fact, 15 of the 21 women in his study were judged to have empty iron stores at the 38th week of pregnancy.

Despite this obvious increased need for iron, considerable controversy exists within the medical community regarding the issue of routine iron supplementation for the pregnant woman. In fact, it has only been within the last couple of years that official policy statements suggesting levels of supplementation have been issued by such groups as the Institute of Medicine and United States Preventive Services Task Force. In 1990, the Food and Nutrition Board of the

Institute of Medicine recommended a supplementation of 30mg/day for the pregnant woman after week twelve of gestation(17). They further recommended additional supplementation of 60 to 120 mg of iron for those women who might be identified as anemic and iron deficient. A comparable recommendation was later issued by the Federation of American Societies for Experimental Biology(37) and the American College of Obstetricians and Gynecologists(38). Then, most recently the United States Preventive Services Task Force presented a policy statement which was based upon a review of the clinical research on the topic(39). They reported that "the evidence is insufficient to recommend for or against routine supplementation during pregnancy."

Reasons for this disagreement within the medical and scientific communities regarding the issue of iron supplementation are related to the lack of well-designed studies. Most information that is provided to support, or refute, the practice of iron supplementation is based solely upon observational investigations that did not control for any other factors that might have affected upon the measured variable(s). Nonetheless, the consistency of results between studies and study designs is considerable, with the majority of results suggesting strong associations between iron balance and various maternal and fetal outcomes.

Though much attention and research has been directed in recent years to answering questions regarding iron status and health of the pregnant woman, very little work has been done to examine the same issues during the postpartum period.

## **PURPOSE**

The purpose of this study includes the following:

1. To determine the proportion of soldiers who return to their preconception fitness level at their first postpartum APFT.
2. To compare the distribution, incidence and risk of injury and illness between postpartum soldiers and non-pregnant, non-postpartum soldiers.
3. To compare changes in weight and body composition between postpartum soldiers and postpartum family members of soldiers in the postpartum period.
4. To compare nutritional status between late pregnant and postpartum soldiers and postpartum family members of soldiers .
5. To compare iron and folate status among late pregnant and postpartum soldiers, late pregnant and postpartum family members, and non-pregnant, non-postpartum soldiers.
6. To compare bone mineral status between late pregnant and postpartum soldiers and family members.

## BODY

### Subjects and General Study Plan

Active duty (AD) and family member (FM) females stationed at Ft. Lewis, Washington, who received their medical care at Madigan Army Medical Center (MAMC) participated in this prospective cohort study. Three study groups were formed based on the following criteria:

- a. Postpartum Active Duty Group (PPAD) - AD females in their third trimester of pregnancy who were scheduled to remain on active duty at Ft. Lewis for at least 6 months postpartum.
- b. Non-pregnant Active Duty Group (NPAD) - Non-pregnant female soldiers who did not have a confirmed pregnancy within 12 months of study inclusion, who were scheduled to remain at Ft. Lewis for at least 6 months after entering the study, and who had a negative pregnancy test at study onset.
- c. Postpartum Family Member Group (PPFM) - Military spouses or daughters of military members who were in their third trimester of pregnancy and not scheduled to move from the area for 6 months after delivery.

Excluded from the study were any pregnant females (soldier or family member) sent to MAMC for definitive obstetrics care who resided outside the MAMC catchment area (50 mile radius); pregnant soldiers who planned on leaving the military immediately after delivery (Expiration Term of Service, ETS) or who had Permanent Change of Station (PCS) orders; any non-pregnant soldier who had a confirmed pregnancy within 12 months prior to study inclusion;

We identified women in their third trimester of pregnancy through the Obstetrics-Gynecology (OB-GYN) clinic at MAMC and asked them to volunteer for the study. Non-pregnant soldiers were solicited from the OB-GYN clinic and through their military unit chain of command. Those who met the inclusion criteria received written and verbal explanations as to the nature, duration, purposes, risks and benefits of the study. Five hundred and fourteen volunteers signed informed consent but only 468 submitted to initial data collection, Table 4.

**Table 4.** Number Of Subjects Who Submitted To Initial Data Collection.

Group	Informed Consent	Initial Data Collection	Initial DEXA** Exam	Initial Phlebotomy	Initial Questionnaire
PPFM	143	126	126	103	106
PPAD	145	127	127	96	99
NPAD	226	215	215	208	199
Total	514	468	468	407	404

\* PPFM = postpartum family member, PPAD = postpartum active duty soldier,  
NPAD = non-pregnant active duty soldier

\*\* Dual Energy X-ray Absorptiometry

### Materials/Outcome Measures

Study subjects underwent phlebotomy to assess iron, folate and calcium status; anthropometric circumference measurements to determine body composition in accordance with Army Regulation (AR) 600-9; dual energy x-ray absorptiometry (DEXA) to measure bone mineral density and to validate body fat percentages obtained by circumference measurements; and low back and hamstring flexibility evaluations. In addition, we assessed soldier fitness using the last pre-pregnant APFT scores and the first postpartum APFT scores. Medical records of all soldiers were reviewed at the 6 month follow-up to record all injuries and illnesses. Demographics, health habits, diet history, and exercise habits before, during and following pregnancy were obtained through questionnaires. These data were collected at four phases according to the schedule in Table 5.

### Background Information

Questionnaires obtained demographic data, a physical activity and exercise history, alcohol and caffeine consumption, prior reproductive health, menstrual history, and a food frequency history.

### Fitness Assessment

The US Army administers a semi-annual APFT to soldiers to measure fitness. The APFT consists of three events: the maximum number of continuous pushups within 2 minutes, the maximum number of continuous sit-ups within 2 minutes, and a timed 2 mile run. The Army converts raw values into an

**Table 5.** Collection Points For Various Outcome Measures.

Group	Pregnancy		Postpartum Period	
	Phase 1 3rd Trimester	Phase 2 D+1-3 days	Phase 3 D+7 weeks	Phase 4 D+6-9 months
PPFM	Phlebotomy Demographics EFFS**	DEXA Phlebotomy Anthropometry	Phlebotomy Anthropometry EFFS Flexibility	DEXA Phlebotomy Anthropometry EFFS Flexibility
PPAD	Phlebotomy Demographics EFFS	DEXA Phlebotomy Anthropometry	Phlebotomy Anthropometry EFFS Flexibility	DEXA Phlebotomy Anthropometry EFFS Flexibility Medical Records review APFT score
NPAD	NA	DEXA Phlebotomy Anthropometry Demographics EFFS	Phlebotomy Anthropometry EFFS Flexibility	DEXA Phlebotomy Anthropometry EFFS Flexibility Medical Records review APFT score

\*D=delivery

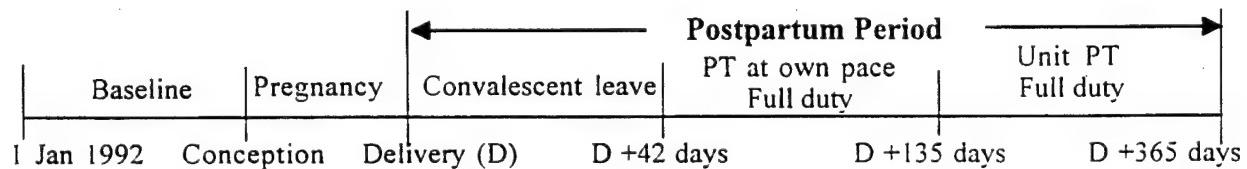
\*\*EFFS=exercise and food frequency survey

age-adjusted numeric score for each event. Sixty points for any event is the minimum score needed to pass that exercise. Failure of any event constitutes failure of the entire APFT. One hundred points is the maximum score that can be earned for a single exercise, 300 points maximum for the test. We obtained the APFT scores from the individual's APFT card (Department of the Army (DA) Form 705) which is maintained by the soldier's unit. The last APFT scores immediately prior to conception were used to assess baseline fitness. Postpartum fitness was based upon the scores from the soldier's first postpartum APFT usually conducted 6-9 months postpartum.

#### Injury/Illness

All AD soldiers maintain a medical record which documents each visit to a military health care provider. We screened the medical records of AD women in the study 6-12 months following delivery and documented all injuries/illnesses

recorded in the records since 1 January 1992. The period of military service which included Basic Training and Advanced Individual Training was not considered in our study. Therefore, we calculated injury and illness rates only for the time a soldier was assigned to a unit after initial military training. Data collected included date of visit, verbatim diagnosis, body part and side affected, disposition, and total limited duty days resulting from injury or illness. We also recorded causes for injuries, if stated in the medical records. An injury was defined as any neuromusculoskeletal complaint that resulted in a visit to a medical clinic and was recorded in the medical records. We defined illness as a visit to the medical facility for medical attention for any reason other than an injury. Visits for immunizations, birth control or routine OB/GYN exams were not included. In order to calculate the risk for injury and illness during the different stages of postpartum recovery, clinic visits and the number of days at risk (total number of days on active duty after initial military training but not before 1 Jan 1992) were recorded in the periods described in Figure 1. This analysis was not limited to the current pregnancy. Pregnancies occurring between 1 Jan 1992 and the study period were included for this analysis.



**Figure 1.** Time periods for different stages of postpartum recovery. These periods correspond to Army Regulation (AR 40-501) governing convalescent leave and activity level for postpartum soldiers prior to 1996.

#### Body Composition Assessment and Bone Mineral Density

Body composition was determined using three methods.

1. Dual-energy x-ray absorptiometry (DEXA) soft tissue and bone mass analyses. DEXA testing was performed on two occasions using Lunar's® DPXL bone densitometer. The pregnant soldier and pregnant family member received an exam 1-3 days and 6-9 months postpartum while the non-pregnant soldiers

received the DEXA at study entry and 6 months later. Each subject lay supine on a DEXA scanner table in shorts and T-shirt or hospital gown. Subjects were carefully positioned so that their body was centered on the table, their hands placed palms down, their head horizontally aligned, and their feet and knees supported and held together with Velcro straps so that the feet leaned away from the body at approximately 40 degrees. To obtain body fat and total fat-free mass, each soldier was scanned in 1 cm slices across the body, beginning from the head, at the 10 minute scanning speed(40). To obtain regional bone mineral density, overlapping slices across the right femoral neck and the lumbar vertebral body were done at the 4 minute and 5 minute scanning speeds, respectively(40). The data were analyzed using the Lunar software version 3.6 algorithms.

2. Body weight and height. Pregnant subjects were asked their typical pre-pregnant body weight through questionnaire. Actual body weights were taken at follow-up visits in shorts and T-shirt on one calibrated weight scale. A tape measure attached against the wall and used to assess standing height.

3. Anthropometric measurements. We measured four circumferences (forearm, wrist, neck and hips) with a flexible fiberglass tape measure. The average of two circumference measurements for each anatomical site was recorded, from which body fat was computed using standard Army equations in accordance with AR 600-9.

#### Nutritional Status

The food frequency data were collected using a modified version of the Health Habits and Diet History Questionnaire, produced by Gladys Block for the National Cancer Institute(41). This questionnaire contains an open-ended food frequency section of 60 food items which gives a semi-quantitative measurement of usual dietary intakes over a period of the previous month.

#### Iron, Folate and Calcium Status

Venous blood was obtained by venipuncture of a superficial vein in the antecubital region. Samples were prepared as described below. Urine was also collected. Analyses were done by Pennington Laboratories, Baton Rouge,

Louisiana and MAMC laboratory. Table 6 lists the assays performed on the collected blood and urine, and the site of analysis.

Blood was collected into vacuum tubes (3 tubes for each draw) by experienced phlebotomists at the hospital lab, using vacutainers. Two samples were collected into 10 ml SST sterile serum separation tubes. These samples were allowed to clot at 4 C for 12 to 24 hours. Sera was retained and stored at -20 C, protected from light, until assayed. One blood sample was collected into a 10 ml whole blood tube with EDTA. A 5 ml aliquot of this sample was processed for analysis of red cell folate and stored at -20 C, protected from light, until assayed. A portion of the blood was analyzed in the local hematology laboratory for hematocrit, hemoglobin, mean corpuscular volume, and red cell mean index. The remainder of the blood was packaged in dry ice and shipped overnight to Pennington Labs, Louisiana. Not all of this blood was analysed due to problems with shipment or storage. On two occasions, frozen samples were inadvertently thawed over a weekend before being analyzed (16 samples on one occasion, 24 samples on another occasion). These samples were not included in the analyses of the data.

Table 7 lists the sample size for the major outcomes available for analyses over four time periods. Data from delivery (D)+2 days and D+6-9 months represent the status of the postpartum soldier at the two time periods of interest: at the end of pregnancy and after she is expected to return to Army fitness, performance and weight standards. Seventy-five percent of subjects who began initial data collection returned for the 6 month follow-up. Table 8 records the number of subjects by study group who failed to complete the study.

**Table 6.** Assays and the Site of Analyses.

<b>Assays</b>		<b>Site of Analyses</b>
Ferritin	Serum	Pennington Labs
Total iron binding capacity	Serum	Pennington Labs
Iron	Serum	Pennington Labs
% saturation	Serum	Pennington Labs
Transferrin	Serum	Pennington Labs
Albumin	Serum	Pennington Labs
Folate	Serum	Pennington Labs
25-OH Vitamin D	Serum	Pennington Labs
Parathyroid hormone	Serum	Pennington Labs
Differential count	Whole blood	MAMC
CBC and RBC indices	Whole blood	MAMC
Phosphorus	Urine	Pennington Labs
Calcium	Serum/Urine	Pennington Labs
Creatinine	Urine	Pennington Labs
Deoxypyridinoline	Urine	Pennington Labs

**Table 7.** Sample Size For Major Outcome Measures Over Four Time Periods.

<b>Time Period</b>	<b>PPFM</b>	<b>PPAD</b>	<b>NPAD</b>
Pregnancy, 3rd Trimester			
Blood	109	100	NA
Delivery (D) +2 days	110	101	197
Blood	111	108	208
DEXA	126	127	215
D+6 weeks	NA	100	206
Blood	91	75	161
Questionnaire 2	86	75	169
D+6-12 months			
Blood	98	93	165
DEXA	98	95	164
Questionnaire 3	94	95	158
Medical Records	NA	78	159
APFT scores	NA	76	189

**Table 8. Reasons For Withdrawal From Study For Each Study Group.**

	PPFM	PPAD	NPAD	Total
PCS*	5	7	12	24
ETS**	1	7	3	11
Too busy	0	1	1	2
Became Pregnant	4	3	5	12
Unable to contact	19	15	32	66
Total n (%)	29 (23.1%)	33 (26.0%)	53 (24.7%)	115 (24.6%)

\*Permanent change of station

\*\* End Tour of Duty

## Data Analysis

Separate databases were created for injuries/illnesses, fitness, body composition, nutrition questionnaire, bone mineral density and biochemical data using FileMaker Pro v3.0 (Claris Corp.). The relational capabilities of FileMaker Pro were then used to relate the databases together using the subject identification number as the key field. This made it possible to extract variables from different databases into new databases that were then used for analysis. Separate analyses were conducted for injuries/illnesses, fitness, body composition, nutrition questionnaire, bone mineral density and biochemical data.

Injury and illness rates were calculated using clinic visits as the numerator and the total person time a soldier was assigned to a unit after 1 January 1992 as the denominator. Injuries and illnesses were summarized for each subject and then exported to Excel (Microsoft Corp.) for computation of risk ratios (RR) and 95% confidence intervals (CI). RR and 95% CI were calculated comparing pregnancy and postpartum rates to baseline (preconception) rates.

We compared fitness within and across two study groups. Within group comparisons were performed for the pregnant soldier and change in fitness was assessed between the preconception and six month postpartum fitness levels using a paired t-test. Between group comparisons were performed for the two soldier groups using an unpaired t-test with StatView 4.51 (Abacus Concepts, Inc.). Body composition and weight change were performed for the two pregnant subject groups and the two soldier groups using an unpaired t-test.

Serum iron, ferritin, TIBC, transferrin, percent saturation, vitamin B-12, calcium, phosphorus, albumin, PTH, and plasma folate, as well as urinary calcium, phosphorus, creatinine, and DPD data were analyzed by analysis of variance (ANOVA) using the GLM procedure of SAS (SAS, 1990). Due to the repeated sampling within subjects over phase, data were analyzed on the basis of a split-plot design, with group as the main-plot factor and phase as the sub-plot factor. Models accounting for the effects of group, subject within group, phase, and group by phase interaction were used. Subject within group was used as the error term to test group effects. For analyses utilizing all phases of sampling, the non-pregnant soldier group was excluded. For analyses including all groups, the

pregnancy phase was excluded. Non-pregnant soldier group phases were matched with pregnant phases as follows: phase 2 (sample 1) for non-pregnant matched with the immediately post-partum sample for pregnant, phase 3 (sample 2) for non-pregnant with the 6 week sample for pregnant, and phase 4 (sample 3) with the 6 month postpartum sample for pregnant. Data for samples falling within ranges found in Table 9 were included in this analysis.

Nutrition questionnaires were scanned using an OpScan 5 (NCS Corp.) bubble sheet scanner. Data were automatically entered into SPSS (SPSS, Inc.) and analyzed by Chi-square analysis.

Bone mineral density data were automatically entered into a dBase III formatted file by the DEXA software. Bone mineral density for the full body, femoral neck, and lumbar spine were compared between the groups and over time using repeated measures ANOVA.

In all analyses, a p-value of less than or equal to 0.05 was required for significance. Interval estimation (95% confidence intervals) were used where applicable.

## RESULTS AND DISCUSSION

### Demographics

Table 9 displays demographic and initial assessment data. The non-pregnant active duty group was older, more highly educated and had a higher percentage of officers compared to the postpartum groups. Postpartum family members consisted of mostly white, married subjects.

**Table 9.** Demographic Data.

Variable	NPAD	PPAD	PPFM
Age (mean yrs $\pm$ SD)	29.9 $\pm$ 7.0	25.2 $\pm$ 4.2	26.2 $\pm$ 5.2
Height (inches $\pm$ SD)	64.7 $\pm$ 3.0	64.4 $\pm$ 2.3	64.4 $\pm$ 2.3
Weight (kg $\pm$ SD)			
pre-pregnancy	64.3 $\pm$ 9.1	63.4 $\pm$ 8.7	64.5 $\pm$ 14.5
1-3 days postpartum	NA	75.1 $\pm$ 11.4	75.6 $\pm$ 13.8
Body Fat, Circumference (% $\pm$ SD)			
1-3 days postpartum	NA	34.6 $\pm$ 4.0	34.7 $\pm$ 6.1
Military Rank (%)			
E1-4	31.5	60.6	42.7
E5-9	37.0	22.1	28.2
O1-3	25.0	16.3	20.9
O4-6	6.5	1.0	2.7
Retired	0.0	0.0	5.5
Race (%)			
White	61.5	57.7	83.2
Black	22.5	29.8	6.2
Hispanic	6.5	9.6	8.0
Other	9.5	2.9	2.6
Marital Status (%)			
Married, accompanied	46.0	68.3	93.8
Married, unaccompanied	7.1	7.7	4.4
Divorced	19.2	3.8	0.0
Single	28.8	20.2	1.8
Highest Level of Education (%)			
High School	56.0	76.2	66.4
College	36.5	20.2	23.0
Graduate School	7.5	3.8	6.2
Smoker (%)	18.5	17.3	22.1

### **Timing Of Follow-Up Visits**

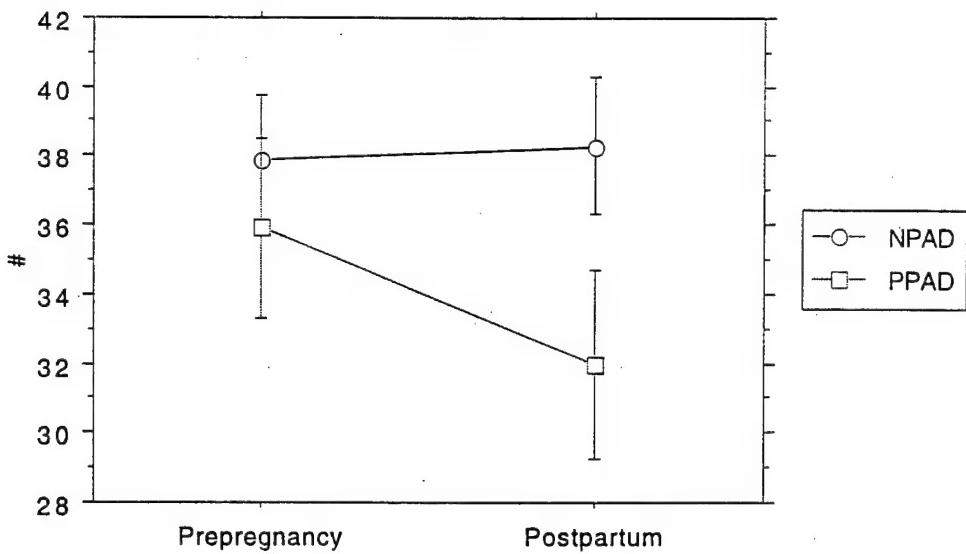
The mean difference between follow-up dates and the delivery date for phases 1, 2, 3, and 4 were  $-30.9 \pm 1.8$ ,  $1.5 \pm 1.8$ ,  $42.8 \pm 2.6$ , and  $198.3 \pm 2.2$  days for the pregnant family member group. In the pregnant soldier group, the means were  $-41.5 \pm 1.9$ ,  $1.2 \pm 1.8$ ,  $43.3 \pm 2.7$ , and  $193.8 \pm 2.2$  days, respectively. The range of days considered to be within the phases are listed in Table 10. There were no differences between groups at any phase, except phase 1. In phase 1, pregnant soldiers were first seen earlier in pregnancy than pregnant family members ( $p < .01$ ). Although statistically significant, this difference is not expected to have any physiological significance.

**Table 10.** Range Of Days Allowed For Follow-Up Visits In Each Phase.

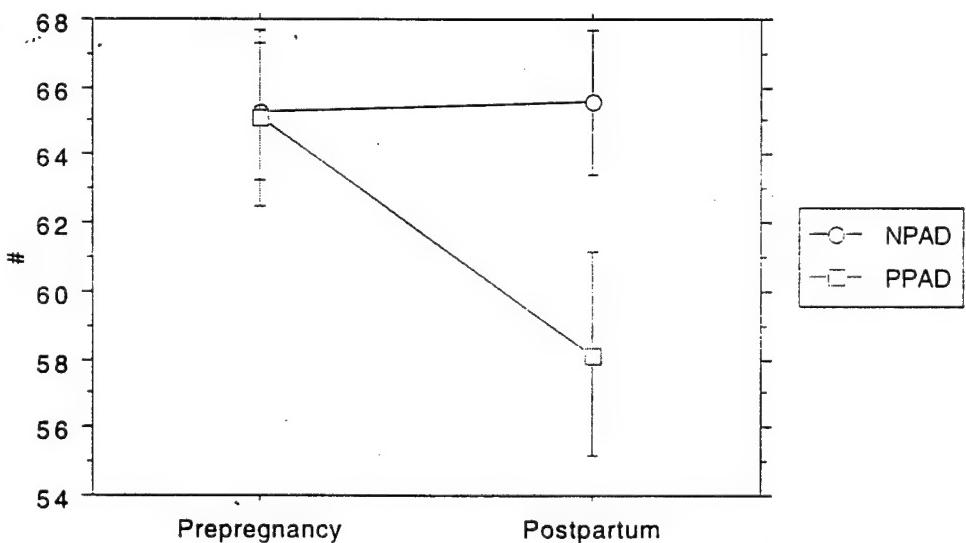
Phase	Range
1	Up to 128 days before delivery
2	Up to 14 days post-partum
3	28 to 56 days post-partum
4	120 to 240 days post-partum

### **Physical Fitness**

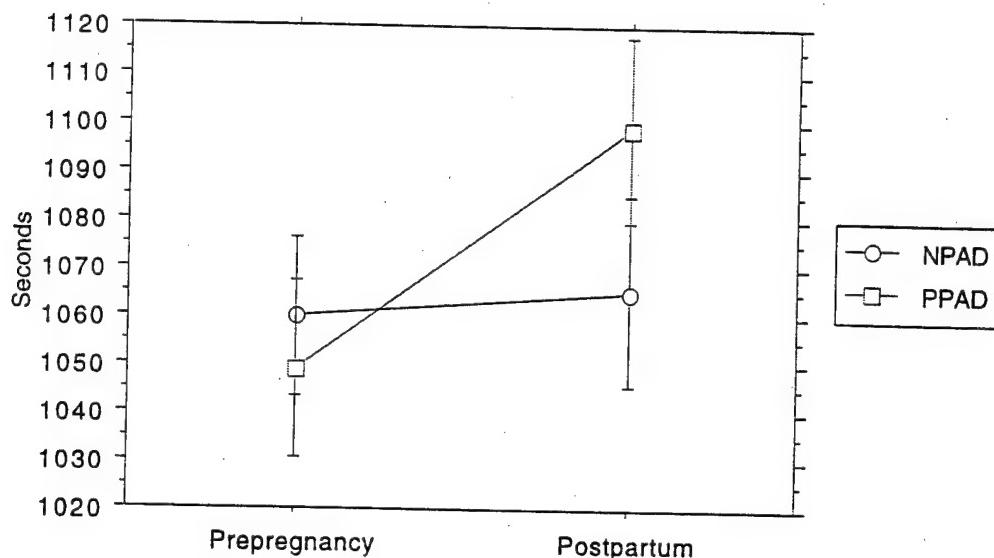
Postpartum soldiers performed worse than their non-pregnant counterparts in all three APFT events (Figures 2, 3, 4). In the postpartum period, 4.4% of the NP women failed their APFT (< 60 points in one or more events), compared to 17.1% of the PP women. Table 11 lists the percent of women who failed each event prior to the study period and during the 6-9 month postpartum period. Postpartum soldiers in this population were almost 4 times as likely to fail their first postpartum test compared to non-pregnant female soldiers.



**Figure 2.** Number of pushups performed at the pre-pregnant and postpartum APFT. There was a significant difference in the change of pushups over time,  $p=0.0044$ , by repeated measures ANOVA. Error bars are 95% CI.



**Figure 3.** Number of sit-ups performed at the pre-pregnancy and postpartum APFT. There was a significant difference in the change of sit-ups over time,  $p<0.0001$ , by repeated measures ANOVA. Error bars are 95% CI.



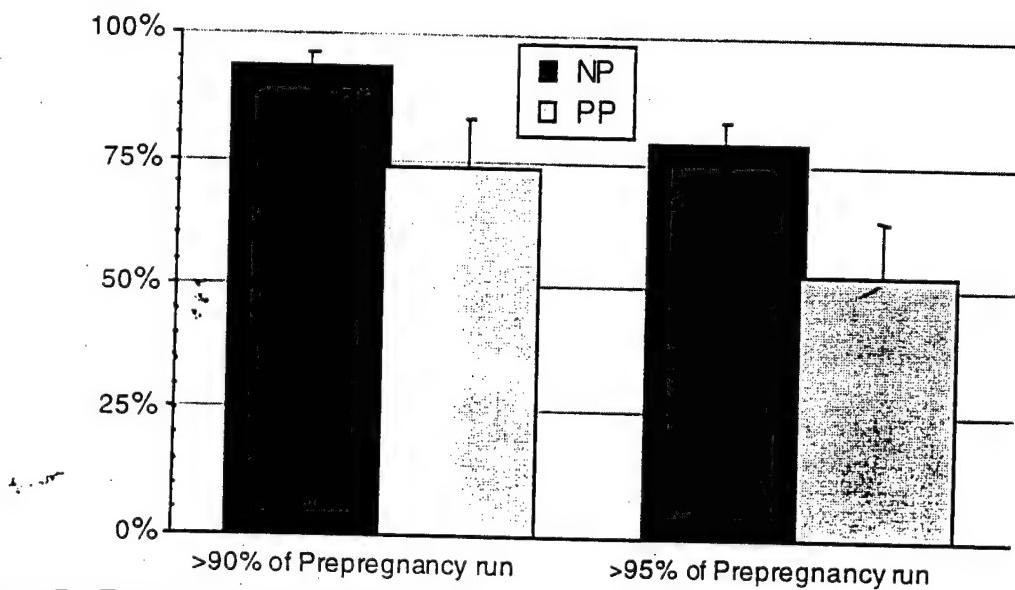
**Figure 4.** Length of time (seconds) to complete the 2 mile run performed at the pre-pregnancy and postpartum APFT. There is a significant difference in the change of run times over time,  $p=0.0015$ , by repeated measures ANOVA. Error bars are 95% CI.

**Table 14.** Failure Rate (%) At APFT 1 (Pre-pregnancy Period) And At APFT 2 (6-9 Postpartum) For Each Event, (RR = relative risk, 95% CI = 95% confidence interval).

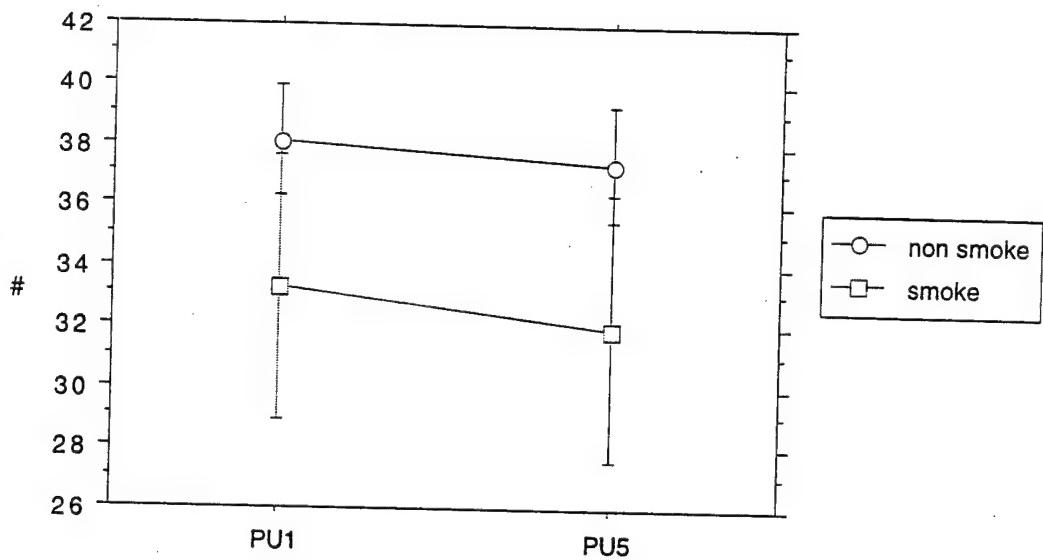
APFT 1		NP	PP	RR	95% CI
Pushup failure rate		0.0	2.0	-	
Sit-up failure rate		1.5	4.0	2.77	0.62<RR<12.40
Run failure rate		3.0	6.1	2.03	0.66<RR<6.30
Total failure rate		3.5	9.1	2.60	0.97<RR<6.97
APFT 2		NP	PP	RR	95% CI
Pushups failure rate		0.5	1.3	2.47	0.16<RR<39.55
Sit-ups failure rate		0.0	6.6	-	-
Run failure rate		3.8	10.5	2.75	0.97<RR<7.59
Total failure rate		4.4	17.1	3.89	1.61<RR<9.39

The percentage of NP women who failed their APFT was lower than the failure rate of women Army wide (13.5%)(42). However, the mean age of our NP women was  $29.9 \pm 7$  years and in the age category 27-31 and 32-36 years, the proportions who failed Army wide were 6.5% and 6.1%, respectively(42). These numbers more closely resemble the failure rates in our non-pregnant population.

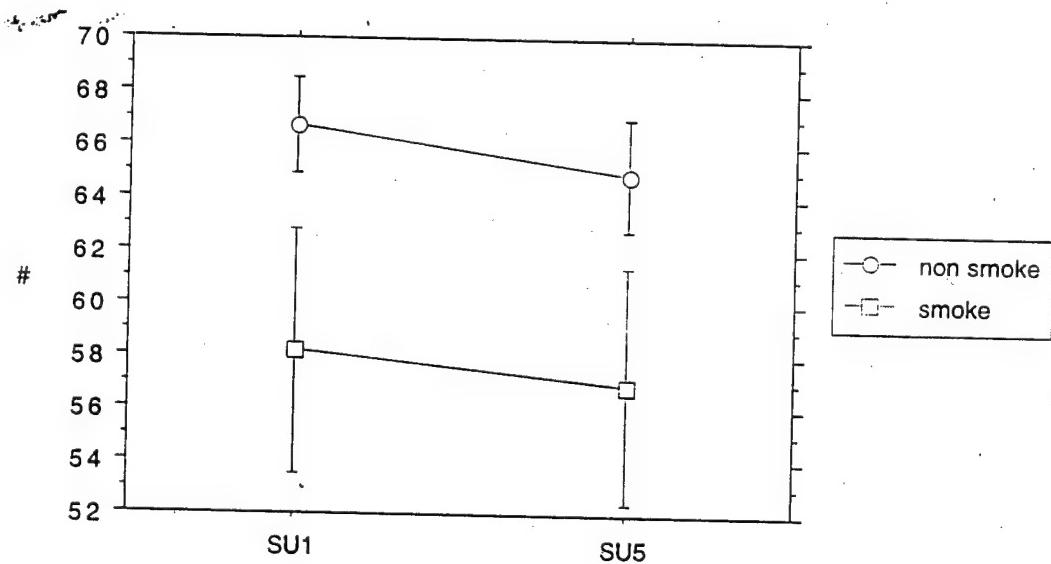
Seventy-four percent of the soldiers returned to within 10% their pre-pregnant 2 mile run time 6-9 months postpartum, while only 53% returned to within 5% of their pre-pregnant time (Figure 5). Women who smoked performed fewer pushups and sit-ups and had slower run times at both pre-pregnancy and postpartum APFTs, Figure 6, 7, 8.



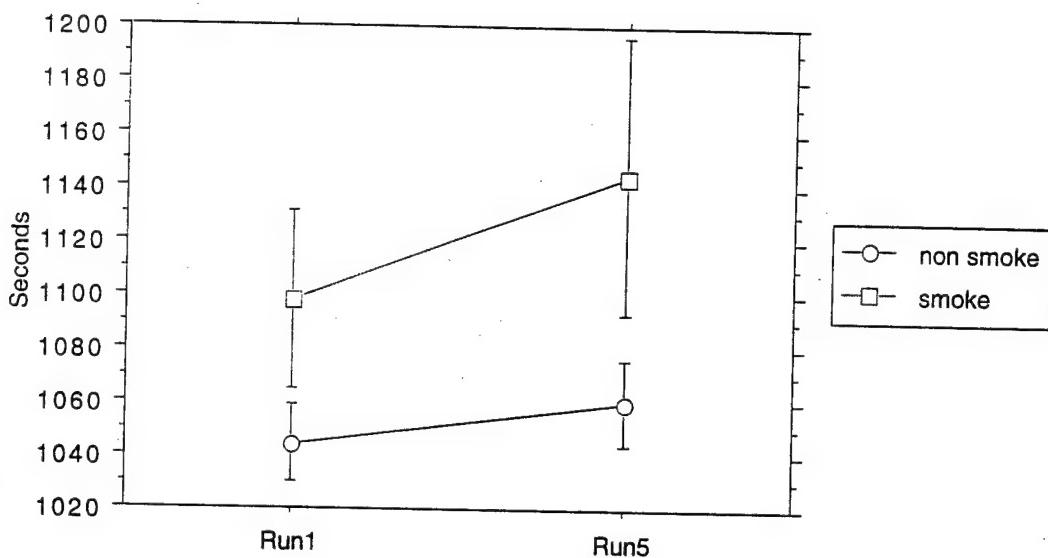
**Figure 5.** Proportion of soldiers who returned to their pre-pregnant two mile run time at their first postpartum APFT. Error bars are 95% confidence intervals.  
NP= non-pregnant, PP = postpartum.



**Figure 6.** Number of pushups for smokers and non-smokers at the pre-pregnancy, PU1, ( $p=0.0027$ ) and postpartum, PU5, ( $p<0.0001$ ) APFT. Error bars are 95% CI.



**Figure 7.** Number of sit-ups for smokers and non-smokers at the pre-pregnancy, SU1, ( $p=0.0027$ ) and postpartum, SU5, ( $p<0.0001$ ) APFT. Error bars are 95% CI.



**Figure 8.** Run times for smokers and non-smokers at the pre-pregnant, Run1, ( $p=0.0027$ ) and postpartum, Run5, ( $p<0.0001$ ) APFT. Error bars are 95% CI.

### Injury and Illness

We documented 808 injuries and 2002 illnesses in 237 female soldiers who averaged 3.85 years of medical history totaling 332,772 days at risk. The crude injury and illness rates for these soldiers were 7.3 and 18.0 per 100 soldiers per month, respectively. Stratifying for postpartum status, injury and illness rates increased during the postpartum period when the soldier returned to duty. The baseline (preconception) injury rate was 7.6 per 100 soldiers per month and rose 35-37% in the postpartum period compared to the baseline period. Table 12 lists the injury rates for each period of interest, the rate ratio compared to the baseline rate and its associated 95% CI. When injuries resulting in time lost from duty were considered, the postpartum rates were 29-31% higher than the baseline period, Table 13.

**Table 12.** Injury Rates, Rate Ratios (RR) and 95% Confidence Intervals (CI) for Army Women During Baseline, Pregnancy and the Postpartum Period.

PERIOD	INJURY RATE*	RR (95% CI)
Baseline (preconception)	7.6	1.00
Pregnancy	2.9	0.39 (0.27<RR<0.55)
Convalescence	1.7	0.23 (0.07<RR<0.72)
Full military duty, limited PT	10.2	1.35 (0.97<RR<1.86)
Full military duty, full PT	10.4	1.37 (1.08<RR<1.75)**

\*per 100 soldiers per month

\*\* p<0.05

**Table 13.** Time-Lost Injury Rates, Rate Ratios (RR), and 95% Confidence Intervals (CI) for Army Women During Baseline, Pregnancy and the Postpartum Period.

PERIOD	INJURY RATE*	RR (95% CI)
Baseline (preconception)	5.2	1.00
Pregnancy	1.9	0.37 (0.24<RR<0.58)
Convalescence	0.6	0.11 (0.02<RR<0.80)
Full military duty, limited PT	6.8	1.31 (0.88<RR<1.95)
Full military, duty full PT	6.7	1.29 (0.96<RR<1.74)

\*per 100 soldiers per month

Most injuries occurred in the lower extremity (48.7%), followed by the trunk (30.1%) and the upper extremity (19.3%). By far, musculoskeletal sprains/strains/pain made up the largest proportion of injuries (67.5%) resulting in the largest burden of lost duty time (8678 days) for the Army. Fractures resulted in the longest average lost duty time,  $80 \pm 19$  days per fracture. Table 14 summarizes the locations and type of injuries experienced by these soldiers.

The greatest proportion of clinic visits was for illness (71%) compared to injury (29%). The illness rate for these soldiers was quite high, 18.5 per 100 per month and increased in the postpartum period by 24%. When considering

**Table 14.** Frequency Distribution for Injury Diagnosis.

	Overall	Lost to duty
Abrasion/contusion	79 (9.8%)	46 (8.4%)
Bite/sting	21 (2.6%)	4 (0.7%)
Blister	25 (3.1%)	8 (1.5%)
Dislocation/subluxation	3 (0.4%)	3 (0.5%)
Fracture	28 (3.5%)	28 (5.1%)
Heat/cold injury	27 (3.3%)	18 (3.3%)
Laceration	19 (2.4%)	9 (1.6%)
Strain/sprain/pain	525 (65.0%)	369 (67.5%)
Tear/rupture	6 (0.7%)	5 (0.9%)
Tendonitis/bursitis/fascitis	71 (8.8%)	55 (10.1%)
Other		
AVN of hip	1 (0.1%)	0 (0.0%)
Blood splash from patient	1 (0.1%)	0 (0.0%)
Inhalation	2 (0.2%)	.2 (0.4%)
Total	808 (100.0%)	547 (100.0%)

illnesses resulting in time lost from duty, there was a 75% increase during the postpartum period. Tables 15 and 16 summarize the illness rates for all illness visits and for those resulting in lost duty time, respectively.

**Table 15.** Illness Rates, Rate Ratios (RR) and 95% Confidence Intervals (CI) for Army Women During Baseline, Pregnancy and the Postpartum Period.

PERIOD	ILLNESS RATE*	RR (95% CI)
Baseline (preconception)	18.5	1.00
Pregnancy	9.2	0.50 (0.41<RR<0.62)
Convalescence	9.3	0.50 (0.31<RR<0.82)
Full military duty, limited PT	19.6	1.06 (0.84<RR<1.33)
Full military duty, full PT	23.0	1.24 (1.06<RR<1.46)**

\*per 100 soldiers per month

\*\* p<0.05

**Table 16.** Time-Lost Illness Rates, Rate Ratios (RR) and 95% Confidence Intervals (CI) for Army Women During Baseline, Pregnancy and the Postpartum Period.

PERIOD	Illness rate*	RR (95% CI)
Baseline (preconception)	5.0	1.00
Pregnancy	2.8	0.57 (0.39<RR<0.81)
Convalescence	2.3	0.46 (0.17<RR<1.24)
Full military duty, limited PT	6.8	1.35 (0.91<RR<2.00)
Full military duty, full PT	8.8	1.75 (1.34<RR<2.29)**

\*per 100 soldiers per month

\*\* p<0.05

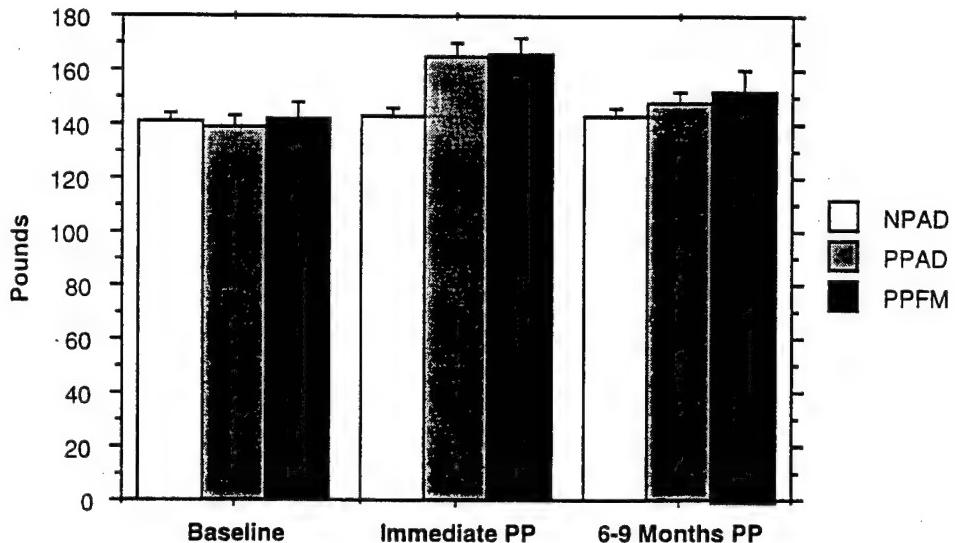
Reproductive/gynecological (24.0%), upper respiratory (18.3%) and eye/ear/nose/throat (EENT, 17.1%) complaints were the chief cause of illness clinic visits. Of these visits, 28% were caused by infections (Table 17).

### Body Composition

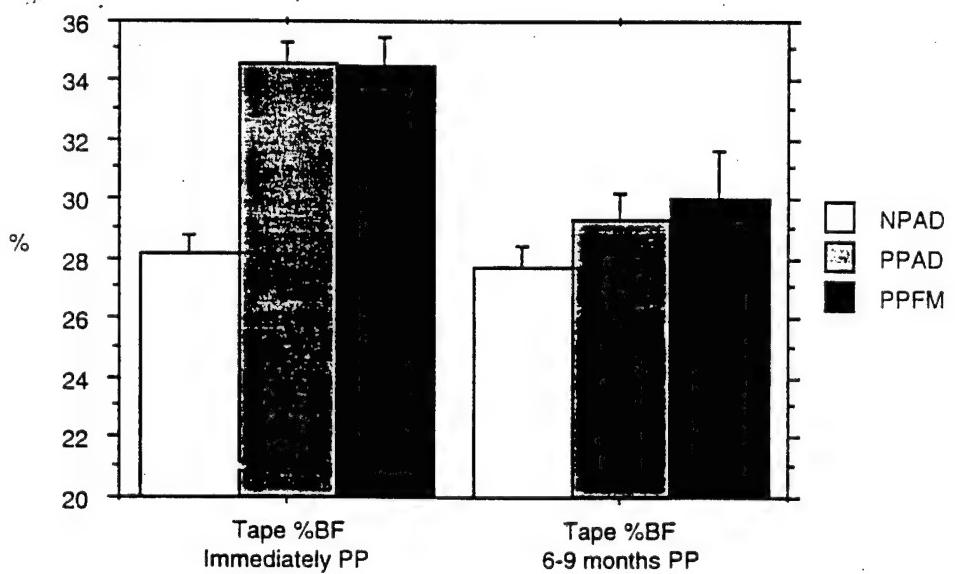
The average pre-study body weights were  $64.3 \pm 9.1$ ,  $63.4 \pm 8.7$  and  $64.5 \pm 14.2$  kg for the NPAD, PPAD and PPFM subjects, respectively. Weight gained during pregnancy and measured within three days post-delivery for PPAD and PPFM was 24.4 and 24.1 lbs. PPAD lost slightly more weight and body fat than the PPFM by the 6-9 month follow-up period, Figures 9 and 10. Generally, most of the women participating in this study tended to be overweight by US Army standards. The proportion of NPAD, PPAD and PPFM who were overweight prior to the study period were 45.1, 45.5 and 33.9%, respectively. The proportion of PPAD women who were above the Army height and weight standard 6-9 months postpartum rose to 66.3%, while 37.5% failed the Army body fat standard circumference measures, Table 18.

**Table 17.** Frequency Distribution for Illness Diagnosis.

	All Illnesses			Illness Requiring Profiling		
	Total Count n (%)	Non-Infectious n (%)	Infectious n (%)	Total Count n (%)	Non-Infectious n (%)	Infectious n (%)
Cardiovascular	34 (1.1%)	33 (3.9%)	1 (0.1%)	34 (0.5%)	3 (1.6%)	0 (0.0%)
Dermatological	90 (9.5%)	155 (18.1%)	35 (3.0%)	173 (3.0%)	12 (6.4%)	5 (1.3%)
Ent	37 (16.8%)	74 (8.6%)	263 (22.9%)	91 (16.2%)	9 (4.8%)	82 (21.9%)
Endocrine	12 (0.6%)	12 (1.4%)	0 (0.0%)	20 (0.4%)	2 (1.1%)	0 (0.0%)
Gastrointestinal	282 (14.1%)	94 (11.0%)	188 (16.4%)	167 (29.7%)	37 (19.7%)	130 (34.8%)
Hematological	2 (0.1%)	2 (0.2%)	0 (0.0%)	1 (0.2%)	1 (0.5%)	0 (0.0%)
Hepatic	3 (0.2%)	2 (0.2%)	2 (0.2%)	5 (0.4%)	1 (0.5%)	1 (0.3%)
Immunological	55 (1.7%)	35 (4.1%)	0 (0.0%)	71 (1.2%)	7 (3.7%)	0 (0.0%)
Musculoskeletal	16 (0.8%)	16 (1.9%)	0 (0.0%)	17 (1.2%)	7 (3.7%)	0 (0.0%)
Psychological	12 (0.6%)	32 (3.7%)	0 (0.0%)	15 (0.9%)	5 (2.7%)	0 (0.0%)
Renal	13 (0.7%)	21 (2.5%)	82 (7.1%)	28 (4.1%)	4 (2.1%)	19 (5.1%)
Reproductive/gynecological	17 (0.7%)	237 (27.7%)	237 (20.6%)	164 (17.4%)	54 (28.7%)	10 (2.7%)
Respiratory/pulmonary	6 (0.3%)	20 (2.3%)	341 (29.7%)	131 (23.3%)	4 (2.1%)	127 (34.0%)
Other	1 (0.05%)	1 (0.1%)	0 (0.0%)	9 (0.0%)	0 (0.0%)	0 (0.0%)
Dehydration	6 (0.3%)	6 (0.7%)	0 (0.0%)	3 (0.5%)	3 (1.6%)	0 (0.0%)
Eating disorder	1 (0.05%)	1 (0.1%)	0 (0.0%)	1 (0.2%)	1 (0.5%)	0 (0.0%)
Fatigue	6 (0.3%)	6 (0.7%)	0 (0.0%)	6 (0.9%)	0 (0.0%)	0 (0.0%)
Nervous	77 (3.8%)	77 (9.0%)	0 (0.0%)	37 (6.6%)	37 (19.7%)	0 (0.0%)
Overweight	25 (1.2%)	25 (2.9%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
Syncope	2 (0.1%)	2 (0.2%)	0 (0.0%)	1 (0.2%)	1 (0.5%)	0 (0.0%)
Tobacco/alcohol abuse	15 (0.2%)	5 (0.6%)	0 (0.0%)	1 (0.0%)	0 (0.0%)	0 (0.0%)
<b>Total</b>	<b>2005 (100.0%)</b>	<b>856 (100.0%)</b>	<b>1149 (100.0%)</b>	<b>562 (100.0%)</b>	<b>188 (100.0%)</b>	<b>374 (100.0%)</b>



**Figure 9.** Body weight (pounds) for the three groups pre-pregnancy (baseline), immediately postpartum and 6-9 months postpartum. Error bars are SE.



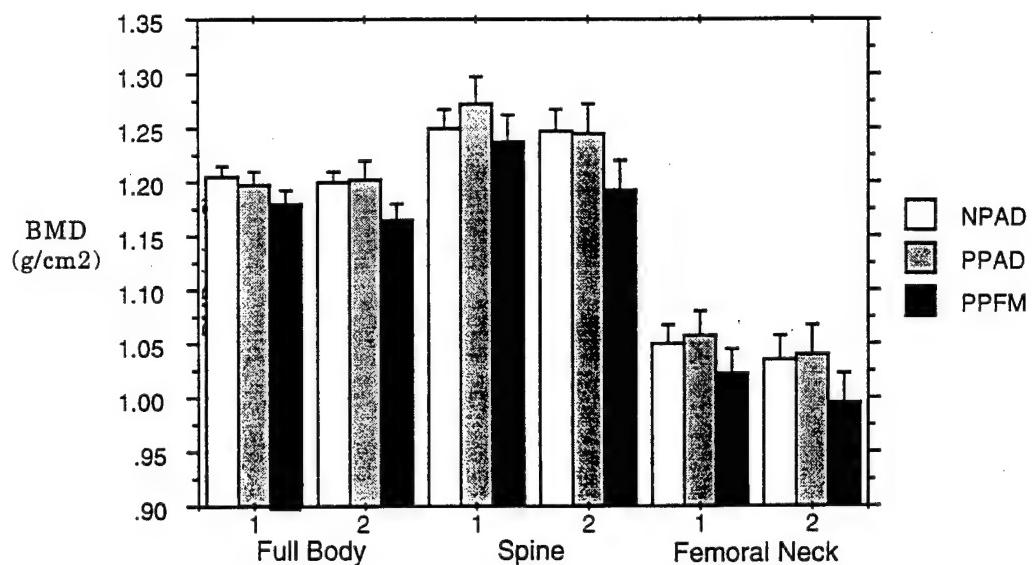
**Figure 10.** Percent body fat (measured by circumferential taping) for the three groups 2-3 days postpartum and 6-9 months postpartum. Error bars are SE.

**Table 18.** Percent Overweight And Overfat by US Army Standards Prior To Pregnancy And 6-9 Months Postpartum.

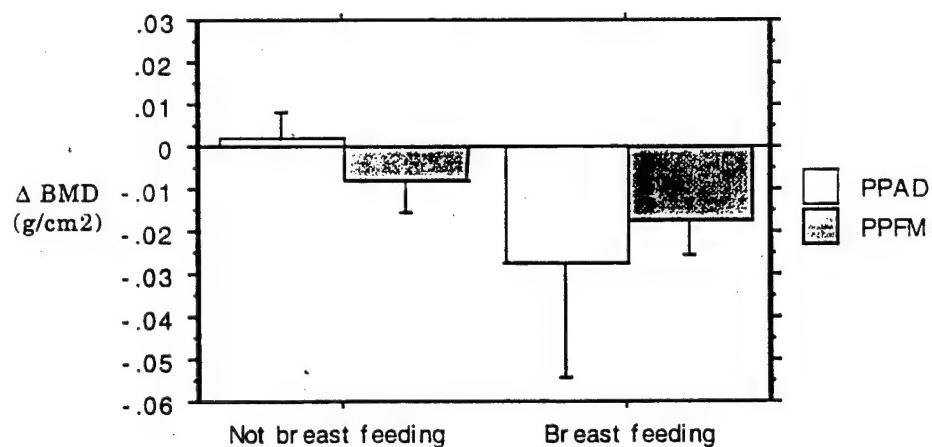
Group	Pre-pregnancy	6-9 months Postpartum		
	% overweight	% overweight	% overfat by taping	% overfat by DEXA
NPAD	45.1	48.3	24.4	42.3
PPAD	45.5	66.3	37.5	64.9
PPFM	33.9	58.3	43.8	72.2

### Bone Mineral Density

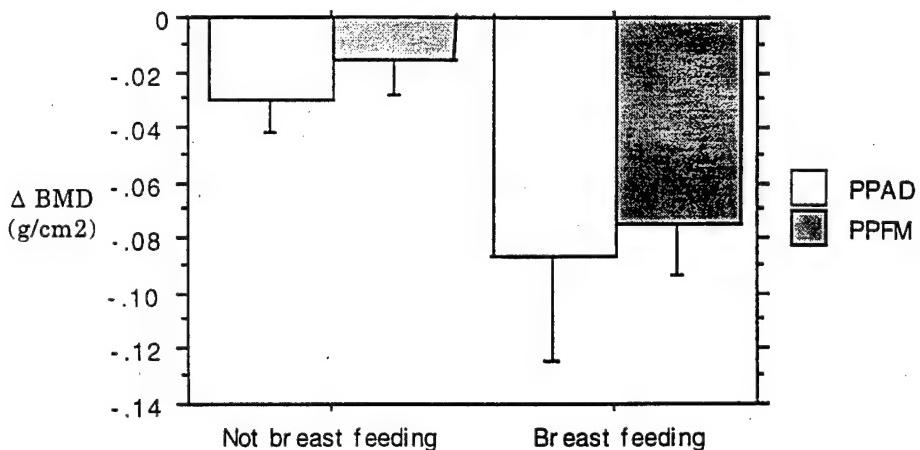
Figure 11 demonstrates the full body, lumbar spine and femoral neck BMD for all groups immediately postpartum and 6-9 months later. When comparing the two AD populations, there was no statistical difference in BMD at the first DEXA. The BMD was consistently higher in the PPAD compared to the PPFM. When compared in the 6-9 month period, this difference was significant for all sites, (full body,  $p=0.0002$ ; lumbar spine,  $p=0.0033$ ; femoral neck,  $p=0.0291$ ). Both postpartum groups continued to lose trabecular bone density (the spine and femoral neck) over time. Breast feeding at 6-9 months resulted in a significant loss of BMD in all areas (full body,  $p=0.0011$ ; lumbar spine,  $p<0.0001$ ; femoral neck,  $p=0.0002$ ), Figures 12, 13, 14.



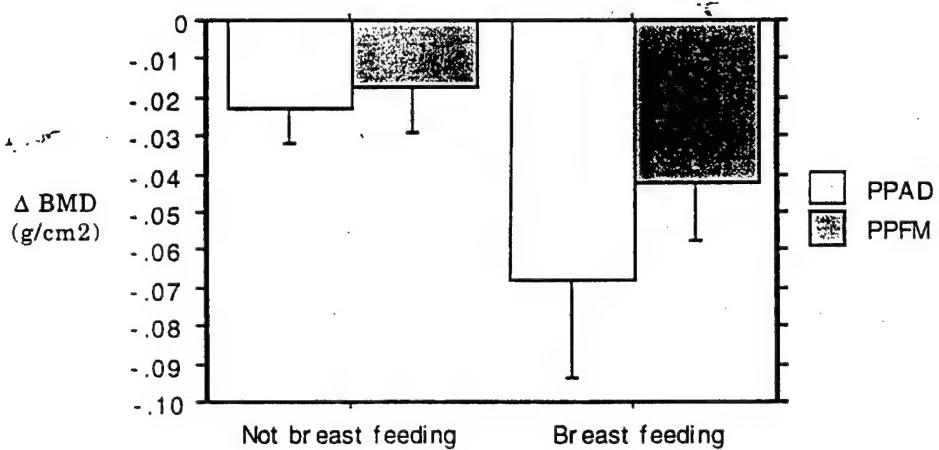
**Figure 11.** BMD (g/cm<sup>2</sup>) for the full body, lumbar spine, and femoral neck at two time periods; period 1, immediately postpartum and period 2, 6-9 months postpartum. Error bars are 95% CI.



**Figure 12.** Change in full body BMD (g/cm<sup>2</sup>) in postpartum women who were breastfeeding at least 25% of the time at 6-9 months. Error bars are 95% CI.



**Figure 13.** Change in lumbar spine BMD (g/cm<sup>2</sup>) in postpartum women who were breastfeeding at least 25% of the time at 6-9 months. Error bars are 95% CI.



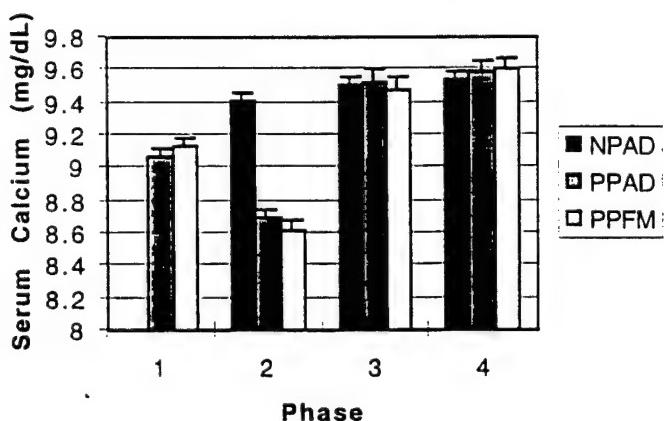
**Figure 14.** Change in full body BMD in postpartum women who were breastfeeding at least 25% of the time at 6-9 months. Error bars are 95% CI.

### Biochemical Markers, Calcium Status

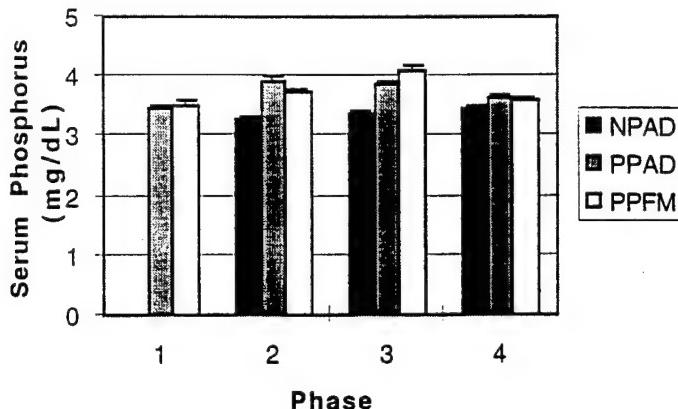
There were significant effects of group, phase, and group by phase interaction on total serum calcium concentrations. Values for pregnant soldiers and pregnant family members did not differ significantly at any phase point. In pregnant subjects, calcium concentrations declined from late pregnancy to immediately post-partum ( $p < .01$ ), then were increased at 6 weeks and 6 months to

levels greater than phase 1 or 2 ( $p<.01$ ). Calcium did not change with phase in non-pregnant soldiers. Concentrations in these soldiers were greater than in the pregnant groups at phase 2 ( $p<.01$ ) but were similar by phases 3 and 4, Figure 15.

There were significant effects of group, phase, and group by phase interaction on serum phosphorus levels. Values for pregnant soldiers and pregnant family members did not differ significantly at any phase point. Serum phosphorus increased from phase 1 to phase 2 ( $p<.01$ ), remained elevated at phase 3, and then declined ( $p<.01$ ) by phase 4 to levels similar to phase 1. Serum phosphorus was higher in pregnant subjects than in non-pregnant subjects at both phase 2 and phase 3 ( $p<.01$ ). By phase 4, concentrations in the pregnant family member group declined to levels similar to non-pregnant soldiers, while the pregnant soldier group was still elevated above the non-pregnant group ( $p<.05$ ), Figure 16.

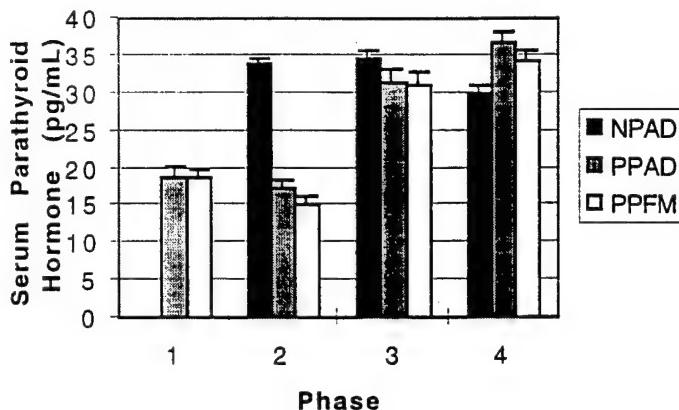


**Figure 15.** Serum Calcium concentrations for all treatment groups at each phase of follow-up. Error bars are SE.



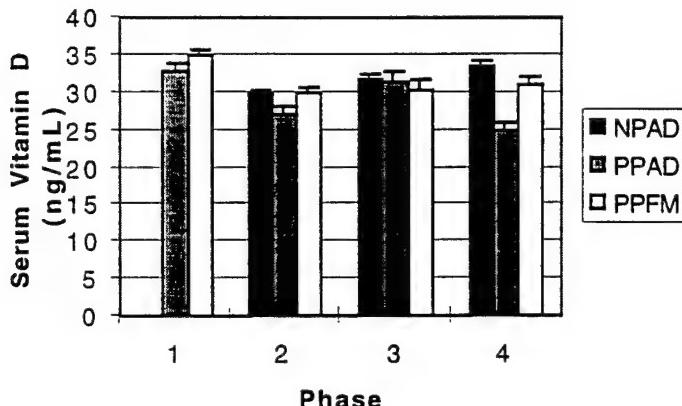
**Figure 16.** Serum phosphorus concentrations for all treatment groups at each phase of follow-up. Error bars are SE.

Serum PTH concentrations were affected by group, phase, and the group by phase interaction, Figure 17. Values for pregnant soldiers and pregnant family members did not differ significantly at any phase point. Concentrations were lowest in the pregnant groups at phases 1 and 2, then increased by phase 3 ( $p<.01$ ) in both groups and continued to increase slightly through phase 4 ( $p<.05$ ) in the pregnant soldier group, while the pregnant family member group did not change significantly from phase 3 to 4. The non-pregnant group exhibited some fluctuation in serum PTH, with no difference between phases 2 and 3 but a slight though significantly lower concentration at phase 4 ( $p<.01$ ). Levels in non-pregnant soldiers were significantly greater than those in the pregnant groups at phase 2 ( $p<.01$ ). The groups were similar at phase 3, and PTH concentrations were higher in the postpartum groups at phase 4 ( $p<.01$ ). Concentrations of PTH in the pregnant groups at phase 4 were similar to those observed at phases 2 and 3 in the non-pregnant soldier group.



**Figure 17.** Serum parathyroid hormone concentrations for all treatment groups at each phase of follow-up. Error bars are SE.

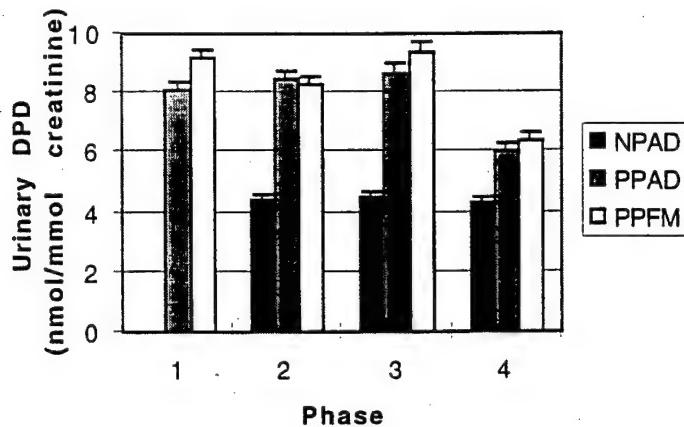
There were effects of phase and group by phase interaction on serum vitamin D levels Figure 18. Values for pregnant soldiers and pregnant family members did not differ significantly at any phase point. Concentrations declined from phase 1 to phase 2 ( $p<.01$ ) in both pregnant groups. In the pregnant family member group, concentrations remained stable from phase 2 onward. In the pregnant soldier group, there was an increase at phase 3 ( $p<.01$ ) followed by a decline at phase 4 ( $p<.01$ ). In non-pregnant soldiers, concentrations increased from phase 1 to phase 2 ( $p<.04$ ) and did not change significantly from phase 2 to phase 3. At phases 1 and 3, concentrations in the pregnant soldier group were lower ( $p<.01$ ) than in the non-pregnant soldier group. In pregnant family members, concentrations differed from the non-pregnant soldier group only at phase 4, when vitamin D concentrations in the pregnant family member group were lower ( $p<.01$ ).



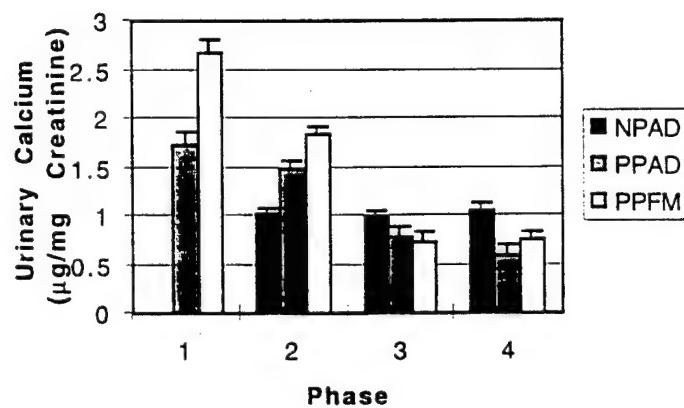
**Figure 18.** Serum 1,25 (OH)<sub>2</sub>-vitamin D concentrations for all treatment groups at each phase of follow-up. Error bars are SE.

Urinary DPD concentrations were affected by group, phase, and the group by phase interaction, Figure 19. Values for pregnant soldiers and pregnant family members differed significantly only during phase 1 ( $p<.05$ ). In both pregnant groups, urinary DPD concentrations increased from phase 1 to phase 2 ( $p<.05$ ), then declined from phase 2 to phase 3 ( $p<.01$ ) to levels similar to phase 1. By phase 4, urinary DPD declined to levels lower than at any previous phase point ( $p<.01$ ). Urinary DPD was higher in pregnant than in non-pregnant groups at phases 2, 3, and 4 ( $p<.01$ ). Within the non-pregnant group, urinary deoxypyridinoline did not differ significantly with phase.

There were significant effects of phase and group by phase interaction on urinary calcium levels, Figure 20. Urinary calcium was higher in pregnant family members than in pregnant soldiers during phases 1 ( $p<.01$ ) and 2 ( $p<.05$ ). In both pregnant groups, concentrations decreased by phase 2 ( $p<.01$ ), continued to decline to phase 3 ( $p<.01$ ) and remained stable to phase 4. From phase 3 onward, concentrations in the two pregnant groups were similar. Urinary calcium concentrations remained stable across phases in the non-pregnant soldier group. At phase 2, concentrations in the pregnant groups were higher than those in non-pregnant soldiers ( $p<.01$ ). At phases 3 and 4, urinary calcium was lower in pregnant than in non-pregnant groups ( $p<.05$ ).



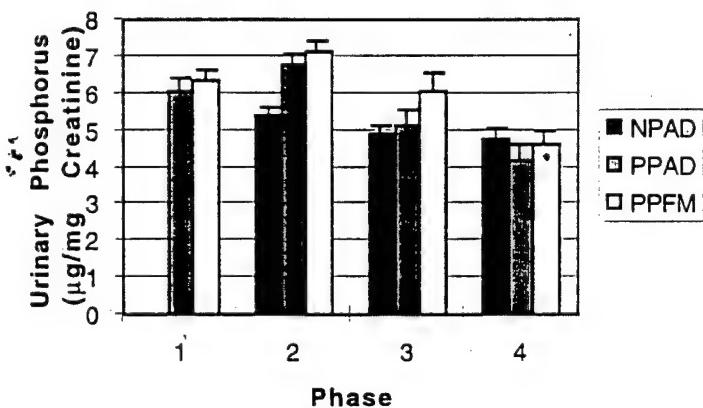
**Figure 19.** Urinary deoxypyridinoline (DPD) concentrations for all treatment groups at each phase of follow-up. Error bars are SE.



**Figure 20.** Urinary Calcium concentrations for all treatment groups at each phase of follow-up. Error bars are SE.

There were effects of group, phase, and group by phase interaction on urinary phosphorus levels, Figure 21. Values for pregnant soldiers and pregnant family members did not differ significantly at any phase point. Concentrations increased numerically from phase 1 to 2 in pregnant family members, then declined progressively thereafter to levels at phase 4 which were

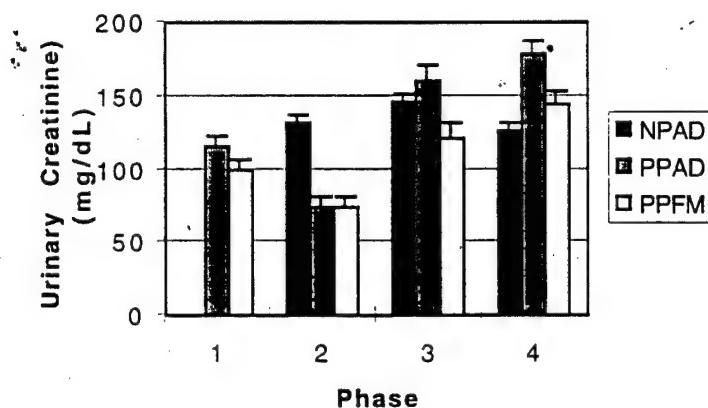
lower than at any other phase ( $p<.01$ ). In pregnant soldiers, concentrations increased numerically from phase 1 to 2, then declined from phase 2 to 3 ( $p<.01$ ) and continued to decline to levels at phase 4 which were lower than at any other phase point ( $p<.01$ ). At phase 2, urinary phosphorus was higher in pregnant than in non-pregnant subjects ( $p<.01$ ). At phase 3, concentrations were higher in pregnant family members ( $p<.05$ ) but not in pregnant soldiers, as compared to non-pregnant subjects. By phase 4, no differences among groups were noted.



**Figure 21.** Urinary phosphorus concentrations for all treatment groups at each phase of follow-up. Error bars are SE.

There were effects of group, phase, and group by phase interaction on urinary creatinine levels, Figure 22. Urinary creatinine was higher in pregnant soldiers than in pregnant family members at phase 1 ( $p<.01$ ). Concentrations declined from phase 1 to phase 2 ( $p<.01$ ) in both the pregnant soldier and the pregnant family member groups. By phase 3, values increased in both groups ( $p<.01$ ), with a higher creatinine level in pregnant soldiers than in the pregnant family member group ( $p<.01$ ). Values in both groups increased numerically to phase 4. At phase 4, values in pregnant soldiers were greater than in pregnant family members ( $p<.01$ ) and values in both groups were greater than in the respective phase 1 samples ( $p<.01$ ). In non-pregnant soldiers, urinary creatinine increased numerically from phase 2 to 3 and then declined ( $p<.01$ ) from

phase 3 to 4, to return to levels similar to phase 2. At phase 2, concentrations were higher in the non-pregnant soldier group than in either pregnant group ( $p<.01$ ). At phase 3, concentrations were greater in non-pregnant soldiers than in pregnant family members ( $p<.05$ ) but did not differ from pregnant soldiers. At phase 4, concentrations were higher in pregnant soldiers than in non-pregnant soldiers ( $p<.01$ ). Creatinine concentrations observed here were within normal (43). Because these values were derived from spot urine samples, further interpretation of these data will not be discussed, except in relation to phosphorus, calcium, and deoxypyridinoline excretion.



**Figure 22.** Urinary Creatinine concentrations for all treatment groups at each phase of follow-up. Error bars are SE.

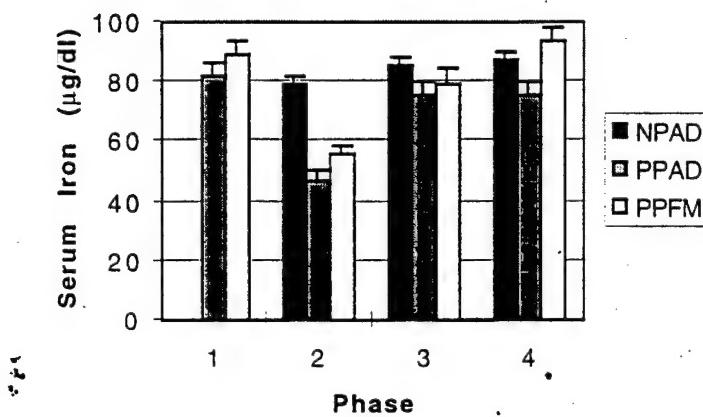
Patterns and concentrations of all parameters studied were within normal ranges for each group(43-45). The patterns of change observed in the pregnant soldiers and pregnant family members are also consistent with patterns expected for normal (45, 46). Urinary DPD was higher in pregnant family members than in pregnant soldiers during late pregnancy but values were similar at all subsequent phases. Values for all other bone mineral related parameters were similar between the pregnant groups. Taken together, these data suggest that bone mineral metabolism and calcium status are similar in soldiers and family members during pregnancy.

As expected, the data reflect periods of increased bone resorption and turnover, progressive hemodilution in late gestation, and compensatory mechanisms designed to meet calcium needs during gestation and lactation. The data are consistent with a normal course of events. By 6 months post-partum, most parameters returned to normal non-pregnant values. However, in the pregnant groups, urinary DPD remained elevated at 6 months and urinary calcium remained depressed. These observations may reflect continuing adjustments in bone mineral metabolism following pregnancy, which may involve lactation in some women. Reduced urinary calcium may reflect renal calcium conservation to meet the needs of lactation or for replenishment of bone mineral mass which may have been lost due to gestation or lactation. Elevated urinary DPD may reflect bone resorption, potentially to meet the needs of lactation. It may also reflect an overall increase in bone turnover, including anabolic bone metabolism. However, this cannot be confirmed because no endocrine or metabolic measure of osteoblastic activity was performed in the present study. Regardless of potential underlying explanations for the urinary calcium and DPD levels in the pregnant groups at 6 months, these data do suggest that bone mineral metabolism has not returned to a completely normal non-pregnant state by six months post-partum.

### Biochemical Markers, Iron and Folate Status

There were significant effects of group, phase, and group by phase interaction on serum iron, Figure 23. In the pregnant groups, concentrations were highest during phase 1, then declined by phase 2 ( $p<.01$ ) and increased by phase 3 ( $p<.01$ ). In pregnant family members, there was a further increase from phase 3 to phase 4 ( $p<.05$ ) to a concentration similar to phase 1. In pregnant soldiers, concentrations did not change significantly from phase 3 to 4. However, phase 3 and 4 levels were similar to phase 1. Some variation among phases was observed in the non-pregnant soldier group, with phase 2 concentrations lower than phase 4 ( $p<.05$ ) but not different from phase 3. Serum iron was higher in non-pregnant soldiers than in either pregnant group at phase 2 ( $p<.01$ ). By phase

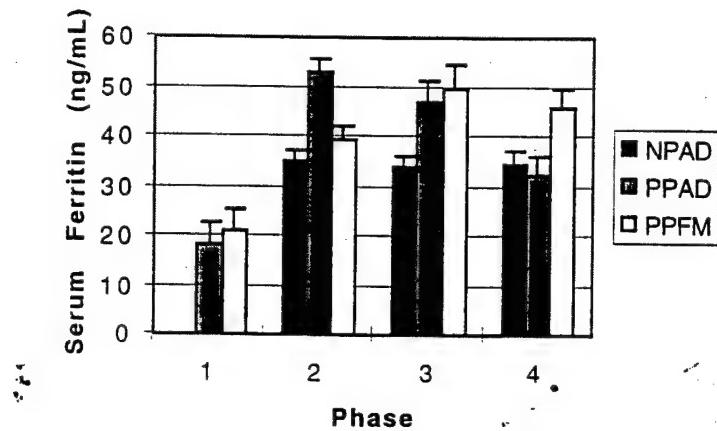
3, values were similar among groups. At phase 4, serum iron in the non-pregnant soldier and pregnant family member groups were similar and both were greater than concentrations in the pregnant soldier group ( $p<.01$ ).



**Figure 23.** Serum iron concentrations for all treatment groups at each phase of follow-up. Error bars are SE.

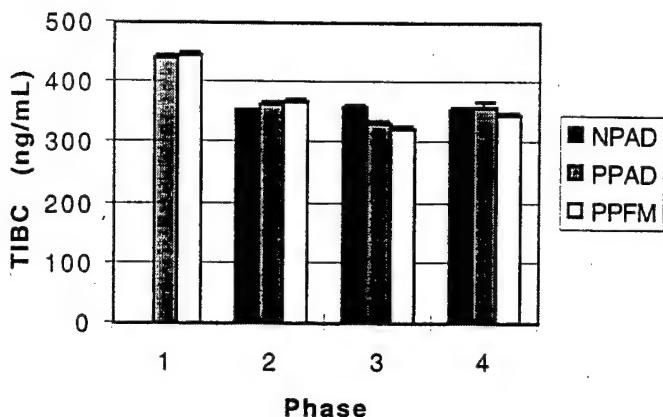
There were significant effects of group, phase, and group by phase interaction on serum ferritin concentrations, Figure 24. In both pregnant groups, concentrations were lowest during phase 1 and increased by phase 2 ( $p<.01$ ). Concentrations were similar at phase 1 but were higher in the pregnant soldier group than in the pregnant family member group by phase 2 ( $p<.01$ ). Concentrations increased from phase 2 to 3 in the pregnant family member group ( $p<.01$ ), while levels in the pregnant soldier group remained stable. Concentrations in the two pregnant groups did not differ at phase 3. However, by phase 4, concentrations in the pregnant family member group were higher than in the pregnant soldier group ( $p<.01$ ). Serum ferritin did not change with phase in the non-pregnant soldier group. At phase 2, concentrations were lower than in the pregnant soldier group ( $p<.01$ ). By phase 3, levels in the non-pregnant soldier group were lower than either of the pregnant groups ( $p<.01$ ). At phase 4, concentrations in the non-pregnant soldier group were lower than in the

pregnant family member group ( $p < .01$ ) but were similar to the pregnant soldier group.



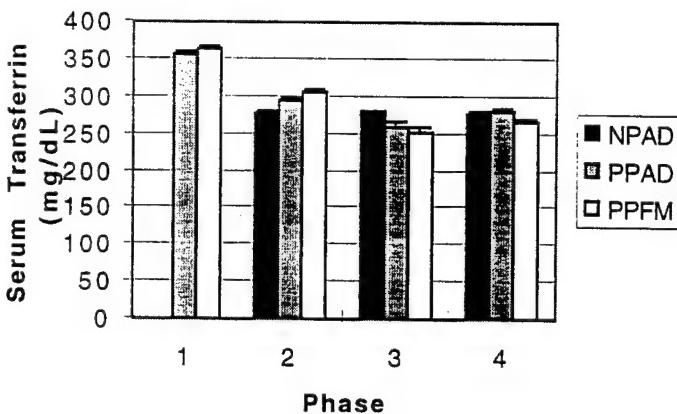
**Figure 24.** Serum ferritin concentrations for all treatment groups at each phase of follow-up. Error bars are SE.

Total iron binding capacity (TIBC) was affected by phase and group by phase interaction effects, Figure 25. There were no differences between the pregnant groups at any phase. In each of the pregnant groups, TIBC was highest during phase 1, then declined by phase 2 ( $p < .01$ ), continued to decline to phase 3 ( $p < .05$ ), and then increased by phase 4 ( $p < .01$ ). Phase 4 levels were similar to phase 2 in the pregnant soldier group but were lower than phase 2 in pregnant family members ( $p < .05$ ). There was no change in TIBC in the non-pregnant soldier group. Values in this group were lower than those in the pregnant family member group ( $p < .05$ ) at phase 2. The values were numerically lower than in the pregnant soldier group at this time ( $p < .10$ ). TIBC in the non-pregnant soldier group was higher than either pregnant group at phase 3 ( $p < .01$ ). By phase 4, no significant difference among groups was evident.



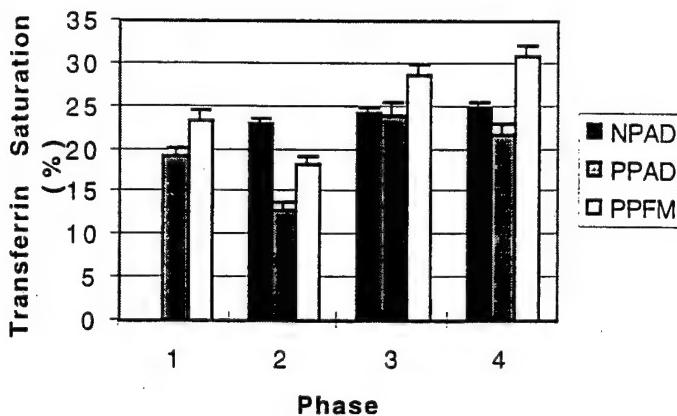
**Figure 25.** Total iron binding capacity (TIBC) concentrations for all treatment groups at each phase of follow-up. Error bars are SE.

There were significant effects of phase and group by phase interaction on transferrin concentration, Figure 26. In both pregnant groups, concentrations were highest at phase 1 and declined by phase 2 ( $p<.01$ ). At phase 1, concentrations did not differ between pregnant groups. However, by phase 2, transferrin was lower in the pregnant soldier group than in the pregnant family member group ( $P<.05$ ). Concentrations continued to decline in each pregnant group to phase 3 ( $p<.01$ ), when concentrations did not differ between the two groups. From phase 3 to phase 4, concentrations increased in each pregnant group ( $p<.05$ ), with the phase 4 transferrin concentration higher in the pregnant soldier group than in the pregnant family member group ( $p<.01$ ). In the non-pregnant soldier group, transferrin concentration did not change with phase. During phase 2, transferrin was lower in the non-pregnant soldier group than in either pregnant group ( $p<.01$ ). At phase 3, concentrations in the pregnant groups were lower than in the non-pregnant soldier group ( $p<.01$ ). At phase 4, the soldier groups were similar, while transferrin concentrations in the pregnant family member group were lower ( $p<.01$ ) than in either soldier group.



**Figure 26.** Serum transferrin concentrations for all treatment groups at each phase of follow-up. Error bars are SE.

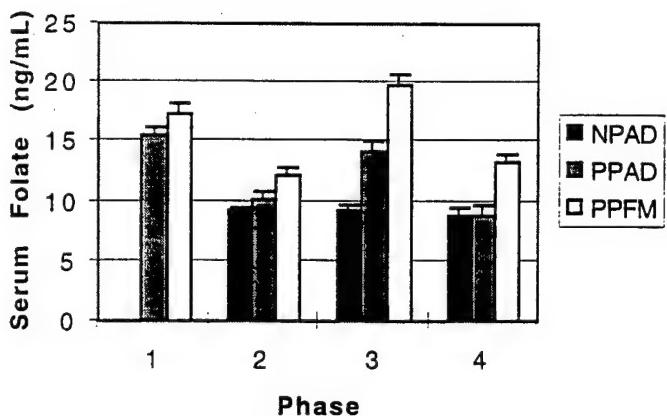
There were effects of group, phase and the group by phase interaction on transferrin saturation, Figure 27. At each of phases 1 ( $p<.01$ ), 2 ( $p<.01$ ), 3 ( $p<.05$ ), and 4 ( $p<.01$ ), percent saturation was lower in the pregnant soldier group than in the pregnant family member group. In both pregnant groups, saturation declined from phase 1 to phase 2 ( $p<.01$ ) and then increased from phase 2 to phase 3 ( $p<.01$ ) and did not change significantly thereafter. In the non-pregnant soldier group, transferrin saturation did not change with phase. Saturation was higher in the non-pregnant soldier group than in either pregnant group at phase 2 ( $p<.01$ ). During phases 3 and 4, percent saturation in the pregnant family member group was higher than in the non-pregnant soldier group ( $p<.01$ ). At phase 3, saturations were similar in the two soldier groups. During phase 4, transferrin saturation was higher in the non-pregnant soldier group than in the pregnant soldier group ( $p<.05$ ).



**Figure 27.** Transferrin saturation concentrations for all treatment groups at each phase of follow-up. Error bars are SE.

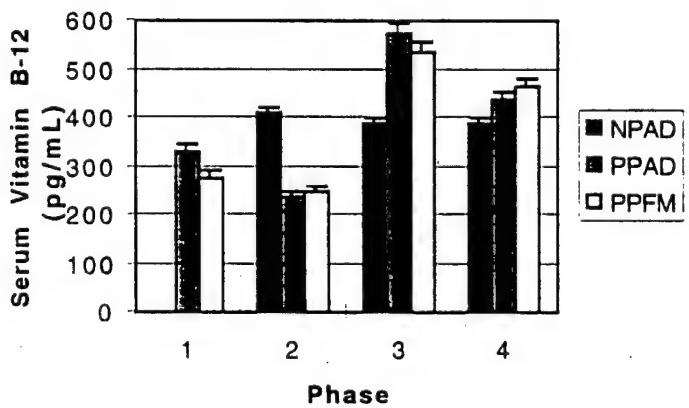
Serum folate was affected by group, phase and the group by phase interaction, Figure 28. Serum folate was numerically greater ( $p < .10$ ) in the pregnant family member group than in the pregnant soldier group during phases 1 and 2. During phases 3 and 4, this difference was significant ( $p < .01$ ). In each pregnant group, serum folate declined from phase 1 to 2 ( $p < .01$ ), increased from phase 2 to 3 ( $p < .01$ ), and then declined from phase 3 to 4 ( $p < .01$ ). Concentrations remained stable across phases in the non-pregnant soldier group. During each phase, serum folate was higher in the pregnant family member group than in the non-pregnant soldier group ( $p < .01$ ). During phase 2, concentrations were similar in the two soldier groups. During phase 3, concentrations were greater in the pregnant soldier group ( $p < .01$ ). In phase 4, concentrations were similar in the two soldier groups.

Phase and group by phase interaction effects on vitamin B-12 concentration were present, Figure 29. Concentrations did not differ between the pregnant groups at any phase. Concentrations declined numerically from phase 1 to 2 in both the pregnant soldier ( $p < .10$ ) and pregnant family member groups ( $p > .10$ ). Concentrations then increased from phase 2 to 3 ( $p < .01$ ) and subsequently



**Figure 28.** Serum folate concentrations for all treatment groups at each phase of follow-up. Error bars are SE.

declined from phase 3 to 4 ( $p<.01$ ) in each pregnant group. Vitamin B-12 concentrations did not change with phase in the non-pregnant soldier group. Concentrations in the non-pregnant soldier group were higher than in the pregnant groups during phase 2 ( $p<.01$ ) and lower than in the pregnant groups at phases 3 and 4 ( $p<.01$ ).



**Figure 29.** Serum vitamin B-12 concentrations for all treatment groups at each phase of follow-up. Error bars are SE.

Means for all variables examined were within normal limits (43, 44) for the non-pregnant soldier group and remained stable. In general, the patterns of change of all variables in the pregnant groups were as expected, reflecting late pregnancy with progressive hemodilution, followed by gradual recovery to the non-pregnant state (45).

During late pregnancy and up to 6 weeks postpartum, it appears that iron status was slightly lower in the pregnant soldier group than in the pregnant family member group. Although TIBC and serum iron, transferrin and ferritin concentrations were similar during this period, percent transferrin saturation was consistently lower in the pregnant soldier group. By 6 months postpartum, the difference in iron status was more clear, with a higher transferrin concentration and lower transferrin saturation, serum ferritin concentration, and serum iron concentration observed in the pregnant soldier group than in the pregnant family member group. As compared to the non-pregnant soldier group, serum ferritin and transferrin saturation were lower in the pregnant soldier group, suggesting that iron status was lower in pregnant soldier group. In contrast, iron status in the pregnant family member group appears to have been higher than that in the non-pregnant soldier group at 6 months postpartum, as indicated by higher ferritin, transferrin saturation and serum iron in the pregnant family member group. As a whole, the data related to iron status suggest that pregnant soldiers have not fully returned to the level of iron status found in non-pregnant soldiers by 6 months postpartum.

Vitamin B-12 status in both pregnant groups was similar and was above the non-pregnant state at 6 months postpartum. Folate status was lower in both soldier groups, as compared to the pregnant family member group. However, by 6 months postpartum, folate status in the pregnant soldier group appeared to be similar to the non-pregnant soldier status.

## NUTRITION

Table 19 summarizes the nutrient intake for all groups during the postpartum period. When comparing reported nutrient intakes between groups, no significant differences existed in mean energy intake between PPFM ( $1877 \pm 647$

kcal) and PPAD ( $1822 \pm 731$ ) during pregnancy (initial survey). However, PPAD intake was significantly lower ( $p < 0.05$ ) than PPFM at phase three (PPFM -  $1701 \pm 593$  kcal vs PPAD -  $1457 \pm 588$  kcal) and phase four (PPFM -  $1617 \pm 682$  kcal vs PPAD -  $1393 \pm 493$  kcal). No significant differences were reported in energy intake between PPAD and NPAD at either phase three (PPAD -  $1457 \pm 588$  kcal vs NPAD -  $1402 \pm 540$  kcal) or phase four (PPAD -  $1393 \pm 493$  kcal vs NPAD -  $1388 \pm 493$  kcal). Additionally, no differences were found between energy intakes of those women reporting that they were on diets versus those who were not. Reported intake in all three groups was lower than Recommended Dietary Allowances (RDA) of 2200 kcal per day (+ 300 kcal for pregnancy, and +500 kcal for lactation), which may be a reflection of the number of women reporting that they were on weight reduction and/or low-fat diets. Iron and folate were below RDA for all three groups in phases 2-4, and calcium in phases 2-4 for military women. For those women reporting special diets during phase two, 4.5% of NPBM and 9.5% of PPAD stated they were on weight reduction/low fat diets, even during pregnancy. For phase three, 17.4% of FM, 17.3% of PPAD, and 20.0% of NPAD reported weight reduction/low fat diets. At phase four 19.0% of PPFM continued on diets, while PPAD had the highest representation at 28.4%, and NPAD 18.2%. During pregnancy, only 87.4% of PPFM and 75.6% of PPAD reported regularly taking multivitamin supplements provided to them. Multivitamin intake after delivery was 78.7% for PPFM, 65.6% for PPAD, and 46.7% for NPAD, indicating that a majority of women continued to take supplementation.

Nutrient intake was similar to that of women in the US, as reported in NHANES III (47). Military women have also been compared to women athletes, having similar nutrient intake (48).

**Table 19.** Self Reported Nutritional Intake During the Postpartum Period in Active Duty Soldiers and Family Members.

Nutrient	Initial Survey*			Phase 3†			Phase 4		
	PPFM	PPAD	NPNP	PPFM	PPAD	NPNP	PPFM	PPAD	NPNP
Energy (kcal)	1877	1822	1484 <sup>b</sup>	1701 <sup>c</sup>	1457 <sup>ac</sup>	1402	1617	1393 <sup>a</sup>	1388
Protein (gm)	81.9	75.8	63.6 <sup>b</sup>	74.8	62.4 <sup>a</sup>	61.7	70.9	59.5 <sup>a</sup>	60.2
Fat (gm)	72.9	69.4	59.7 <sup>b</sup>	66.9	52.5 <sup>a</sup>	54.5	64.8	53.6 <sup>a</sup>	56.2
CHO (gm)	227.3	226.6	171.3 <sup>b</sup>	202.3	183.5	163.3	189.0	165.9 <sup>a</sup>	158.4
Calcium (mg)	1311.0	1087.5 <sup>a</sup>	762.0 <sup>b</sup>	1145.0	822.1 <sup>a</sup>	708.4	1005.4	692.7 <sup>a</sup>	724.2
Iron (mg)	13.2	12.2	10.8 <sup>b</sup>	12.2	9.6 <sup>a</sup>	10.5	11.1	9.4 <sup>a</sup>	10.1
Folate (mcg)	392.2	354.5	267.8 <sup>b</sup>	337.7	281.4 <sup>a</sup>	260.5	294.9	239.5 <sup>a</sup>	251.4

\*Initial survey was at phase 1 for PPFM and PPAD, phase 2 for PPNP

<sup>a</sup> Significantly different from NPFM ( $p<0.05$ )

<sup>b</sup> Significantly different from PPAD ( $p<0.05$ )

<sup>c</sup> Significantly different from phase 2 ( $p<0.05$ )

## CONCLUSIONS

1. A large proportion (48%) of pregnant soldiers failed to return to their pre-pregnancy fitness level 6-9 months postpartum. These postpartum soldiers were four times more likely to fail the APFT at their first postpartum fitness test as compared to non-pregnant female soldiers. These data support the popular trend in the Army to initiate a mandatory, graded postpartum PT program specifically targeted to this population.
2. Injury and illness rates for females not in CBT or AIT were 7.3 and 18.0 per 100 soldiers per month, respectively. These rates increased for women by one third when they return to duty and unit PT during the postpartum period. This rise in rates may be associated with poor fitness as described above. Poor nutrition associated with trying to lose weight is another factor that may contribute to this rate increase. Reported energy and nutrient intakes of military women were below RDA in both postpartum phases measured and were significantly lower than values reported by family members, suggesting that military women may have attempted to lose weight more rapidly to meet the Army weight standards. Continued emphasis on weight management at the expense of nutritional status is of concern for the health of military women.
3. Forty-five percent of active duty women participating in this study did not meet the Army's body weight standard. During the postpartum period when soldiers are required to meet the Army standard, this proportion increased to about 66%. More than one third of all postpartum soldiers at this time were determined to be overfat, as determined by the Army circumferential tape method.
4. Bone mineral density in trabecular bone was reduced in postpartum soldiers. This bone loss occurred after delivery and was increased in lactating mothers. Biochemical markers suggest that bone mineral metabolism had not returned to a normal non-pregnant state at 6-9 months. In addition, military women had significantly lower postpartum dietary calcium compared to FM, although both

military women and family members reported adequate dietary calcium intake during pregnancy. The reduced dietary calcium intake in the postpartum period, if continued, may be detrimental to future bone health.

5. Soldiers 6-9 months postpartum have not fully returned to the level of iron status found in non-pregnant soldiers. Inadequate iron intake, as well as sporadic use of multivitamin and iron supplements in military women may provide some explanation for this decline.

## **RECOMMENDATIONS**

1. Studies should be pursued to determine if a mandatory, graduated postpartum physical training program would return a higher proportion of soldiers to their pre-pregnancy fitness level 6 months postpartum. This program should emphasize consistency and include both strength and aerobic conditioning.
2. More research is needed to determine if the US Army body fat standard for postpartum women is achievable. With 66% of these women overweight and 37% overfat 6-9 months postpartum, additional studies should be conducted to assess the effect of different postpartum exercise and dietary strategies on body composition and nutritional status.
3. Bone mineral density in lactating soldiers was reduced by about 5.5% 6-9 months postpartum. A longer prospective study would help to determine when bone mineral metabolism returns to a normal state and when trabecular bone density rebounds to normal.
4. Female soldiers assigned to Army units had injury rates far less than those in Combat Basic Training and Advanced Individual Training, while illness rates remained about the same. However, during the postpartum period, both these rates increased by about one third. This may be due to a host of factors including poor fitness, excessive weight, poor nutritional status, added stress of motherhood and other factors currently unknown. More studies are needed to determine the interaction of physical and psycho-social factors resulting from pregnancy on the health of soldiers who are required to return to full duty 6 weeks postpartum, and meet the Army body fat and Army fitness standards 6 months postpartum.

## **REFERENCES**

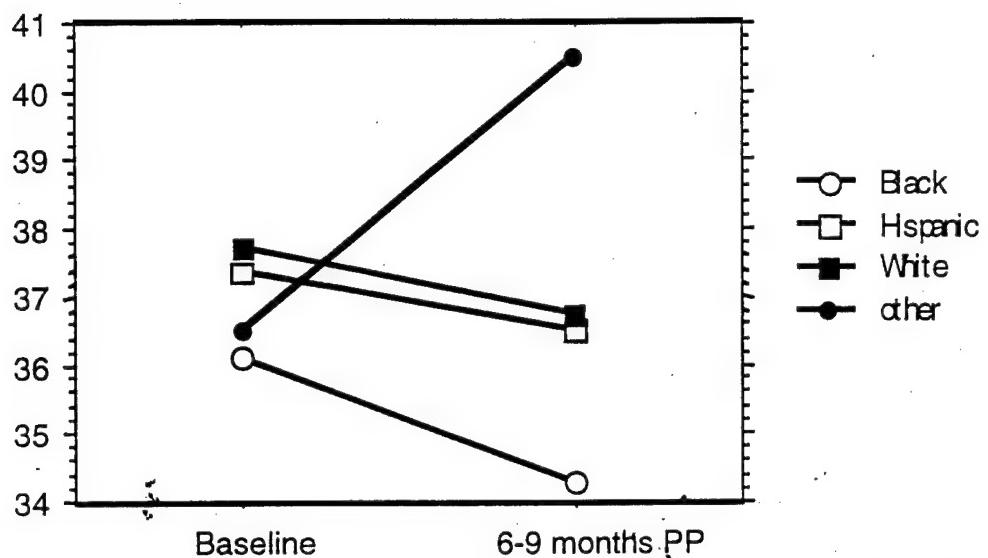
1. DOD. Military Manpower Statistics. (Washington Headquarters Services, Directorate for Information Operations and Reports), 1993.
2. DOD. Department of Defense Military Personnel by Rank/Grade. (Directorate for Information Operations and Reports, Statistical Information Analysis Division), 1997.
3. Erdelyi GJ. Gynecological survey of female athletes. *J Sports Med Phys Fitness* 1962;2:174-179.
4. Dibblee L, Graham TE. A longitudinal study of changes in aerobic fitness, body composition, and energy intake in primigravid patients. *AM J Obstet Gynecol* 1983;147:908-914.
5. McMurray RG, Hackney AC, Katz VL, Gall M, Watson WJ. Pregnancy-induced changes in the maximal physiological responses during swimming. *J Appl Physiol* 1991;71(4):1454-1459.
6. South-Paul JE, Krishnan RR, Tenholder MF. Exercise responses prior to pregnancy and in the postpartum state. *Med Sci Sports Exerc* 1992;24:410-414.
7. Capeless EL, Clapp JF. Cardiovascular changes in early pregnancy. *Am J Obstet Gynecol* 1989;161:1449-1453.
8. Cowan D, Jones B, Tomlinson P, et al. The epidemiology of physical training injuries in U.S. Army infantry trainees: methodology, population and risk factors. *Technical report T 4/89* (U.S. Army Research Institute of Environmental Medicine), 1988.
9. Jones BH, Bovee MW, Knapik JJ. Associations among body composition, physical fitness, and injury in men and women army trainees. *Body Composition and Physical Performance*. Washington D.C.: National Academy Press, 1992:141-172. (Marriott BM, Gumstrup-Scott J, eds.
10. Jones BH, Cowan DN, Tomlinson PJ, Robinson JR. Epidemiology of injuries associated with physical training among young men in the army. *Med Sci Sports Exerc* 1993;25(2):197-203.
11. Jones BH, Bovee MW, Harris JM, Cowan D. Intrinsic risk factors for exercise-related injuries among male and female army trainees. *The American Journal of Sports Medicine* 1993;21:705-710.
12. Kimsey CD. The epidemiology of lower extremity injuries in United States Marine Corps recruits [Doctoral dissertation]: University of South Carolina, 1993.

13. Knapik JJ, Ang P, Reynolds K, Jones B. Physical fitness, age and injury incidence in infantry soldiers. *Journal of Occupational Medicine* 1993;35:598-603.
14. Reynolds KL. U.S. Army Institute of Environmental Medicine, Natick, MA 01760. 1991.
15. Reynolds KL, Heckel HA, Witt CE, et al. Cigarette Smoking, Physical Fitness, and Injuries in Infantry Soldiers. *American Journal of Preventive Medicine* 1994;10(3):145-150.
16. Bell NS. High injury rates among female Army trainees: A function of gender? [Doctoral dissertation], 1994.
17. Nutrition During Pregnancy, Part II: Nutrient Supplements (National Academy Press, Washington D.C., 1990).
18. Westphal K, Friedl K, Sharp M, et al. Health, performance, and nutritional status of U.S. Army women during basic combat training. Technical Report: T96-2 (U.S. Army Research Institute of Environmental Medicine), 1995.
19. Schuberger CW, Rooney BL, Brimer LM. Factors that influence weight loss in the puerperium. *Obstet Gynecol* 1992;79:424-9.
20. Clapp JF, III, Capeless E. The VO<sub>2</sub>max of recreational athletes before and after pregnancy. *Med Sci Sports Exerc* 1991;23(10):1128-1133.
21. Myburgh KH, Hutchins J, Fataar AB, Hough SF, Noakes TD. Low bone density is an etiologic factor for stress fractures in athletes. *Ann Int Med* 1990;113:754-759.
22. Prentice A. Maternal calcium requirements during pregnancy and lactation. *Am J Clin Nutr* 59(suppl) 1994:477S-483S.
23. Specker BL, Tsang RC, Ho ML. Changes in calcium homeostasis over the first year postpartum: Effect of lactation and weaning. *Obstet Gynecol* 1991;78:56-62.
24. Zinaman MJ, Hickey M, Tomai TP, Albertson BD, Simon JA. Calcium metabolism in postpartum lactation: the effect of estrogen status. *Fertil Steril* 1990;54:465-469.
25. Dalsky GP. Effect of exercise on bone: permissive influence of estrogen and calcium. *Med Sci Sports Exerc* 1990;22:281-285.
26. Prentice AM, Lunn PG, Watkinson M, Whitehead RG. Dietary supplementation of lactating Gambian Women: II. Effect on maternal health, nutritional status and biochemistry. *Hum Nutr Clin Nutr* 1983;37.

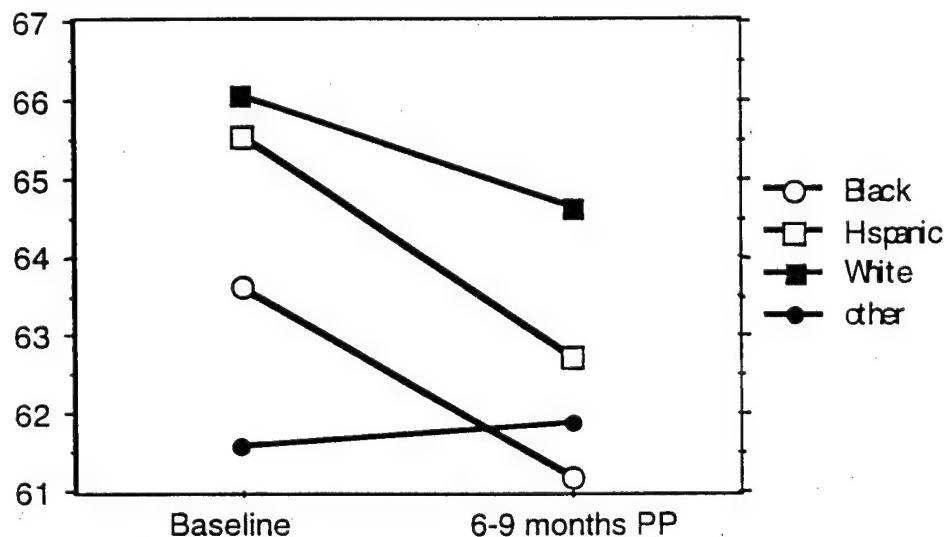
27. McNeilly AS. Suckling and control of gonadotropin secretion. In: Knobil E, Neill JD, eds. *The Physiology of Reproduction*. New York: Raven Press, Limited, 1988:2323-2349.
28. NRC F, Food and Nutrition Board, National Research Council: Recommended Dietary Allowances (National Academy Press, Washington D.C., ed. 10th, 1989).
29. Dietary Reference Intakes. Board FaN, Ed. (National Academy of Sciences, 1997).
30. King N, Fridlund KE, Askew EW. Nutritional Issues of Military Women. *J American College of Nutrition* 1993;12(4):344-348.
31. Clement DB, Sawchuck LL. Iron status and sports performance. *Sports Medicine* 1984;1:65-74.
32. Hallberg L. Iron balance in pregnancy. In: Berger H, ed. *Vitamins and minerals in pregnancy and lactation*. New York: Raven Press, 1988:
33. FDA. Assessment of the iron nutritional status of the US population based on data collected in the Second National Health and Examination Survey, 1976-1980. (Food and Drug Administration, Life Sciences Research Office), 1984.
34. CDC. Anemia during pregnancy in low-income women. *MMWR* 1990;39:73-76.
35. Worthington-Roberts B. The role of nutrition in pregnancy course and outcome. *J Environ Pathol Toxicol Oncol* 1985;5:1-80.
36. Thomsen JK, Prien-Larsen M, Devantier A, Fogh-Andersen N. Low dose iron supplementation does not cover the need for iron during pregnancy. *Acta Obstet Gynecol Scand* 1993;72:93-98.
37. Guidelines for the Assessment and Management of Iron Deficiency in Women of Childbearing Age (Federation of American Societies for Experimental Biology, Bethesda, MD, 1991).
38. Guidelines for Perinatal Care (American College of Obstetricians and Gynecologists, American Academy of Pediatrics, Washington D.C., 1992).
39. Anonymous. U.S. Preventive Services Task Force: Routine iron supplementation during pregnancy. *JAMA* 1993;270(23):2846-2848.
40. Dual Energy X-ray Absorptiometry (DEXA). Operator's manual. Madison, Wisconsin: Lunar Corporation, 1993:chapters 12,13.
41. Block G, Wys W. Diet history and other risk factors. (National Institute of Health), 1987.

42. Tomasi L. 1995 US Army Physical Fitness Test Update Survey. (Personal Communication), 1997.
43. Rood J. Validated laboratory values for Pennington Biomedical Research Laboratory. 1997.
44. Tietz Textbook of Clinical Chemistry. Burtis CA, Ashwood ER, Eds. (WB Saunders Company, Philadelphia, 1994).
45. Normal values in pregnancy. Ramsey MM, James DK, Steer PJ, Weiner CP, Gonik B, Eds. (WB Saunders Company, Philadelphia, 1996).
46. Mimouni F, Tsang RC, Perinatal mineral metabolism. Tulchinsky D, Little AB, Eds., Maternal-Fetal Endocrinology (WB Saunders Company, Philadelphia, 1994).
47. Interagency Board for Nutrition Monitoring and Related Research: Third report on nutrition monitoring in the United States. (U.S. Government Printing Office, Life Sciences Research Office, Federation of American Societies for Experimental Biology), 1995.
48. Haymes EM, Spillman DM. Iron status of women distance runners, sprinters, and control women. International Journal Sports Medicine 1989;10:430-433.

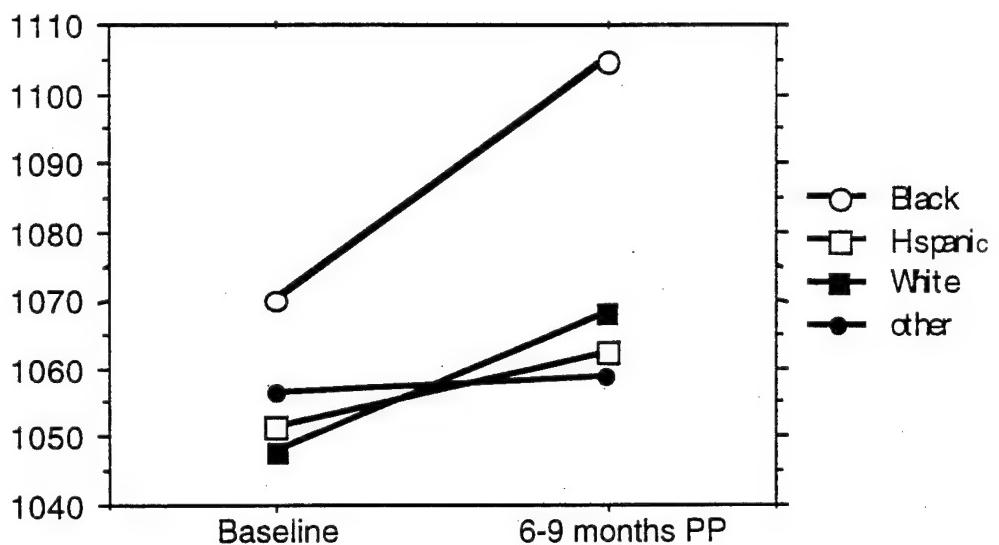
**APPENDIX 1**  
**FITNESS STRATIFIED BY RACE**



Number of pushups performed at the pre-pregnancy and postpartum APFT, stratified by race.

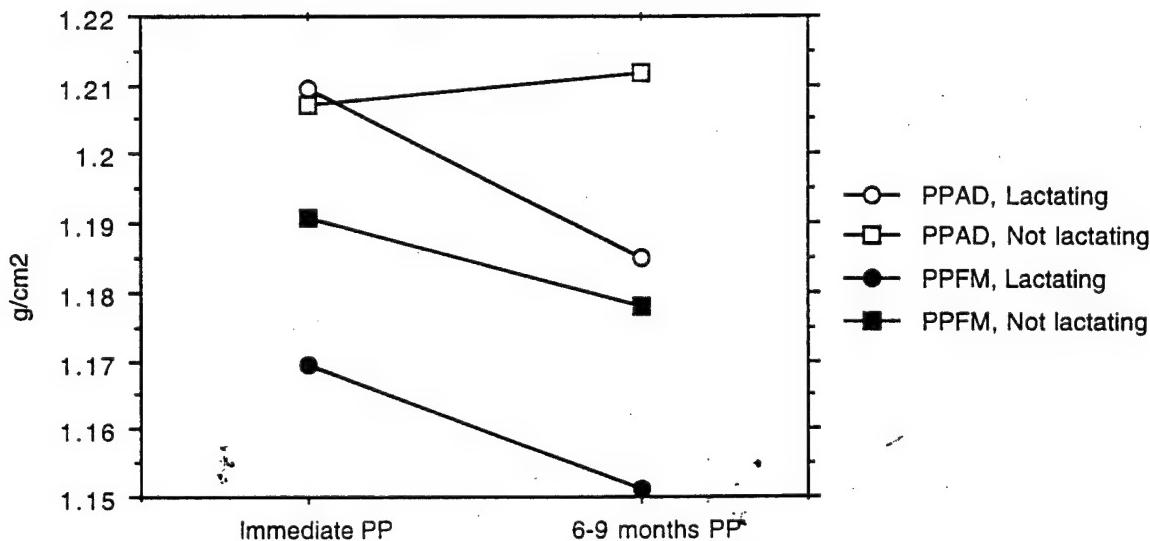


Number of sit-ups performed at the pre-pregnancy and postpartum APFT, stratified by race.

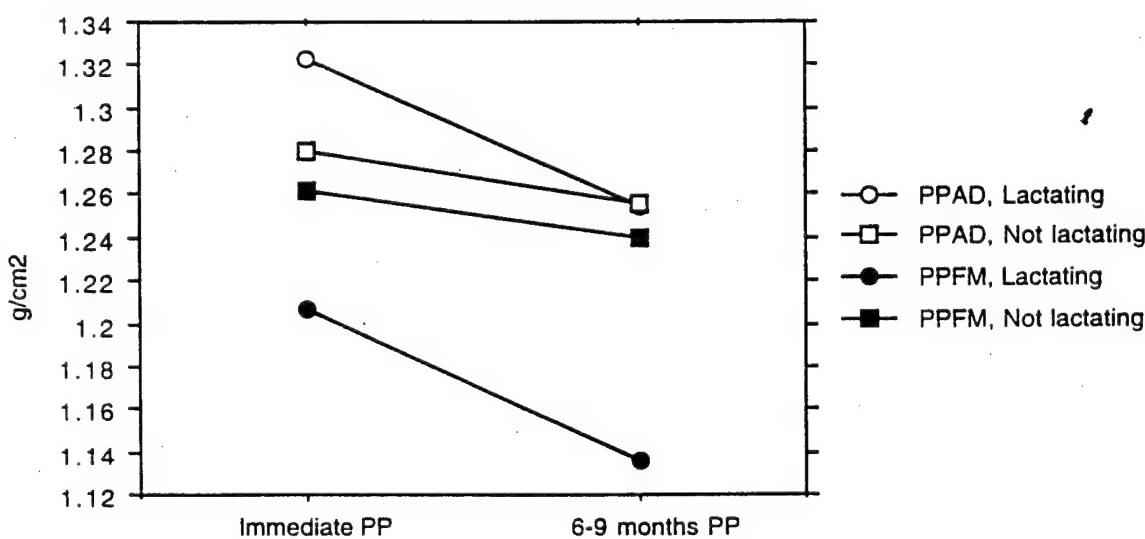


Two mile run times (seconds) performed at the pre-pregnancy and postpartum APFT, stratified by race.

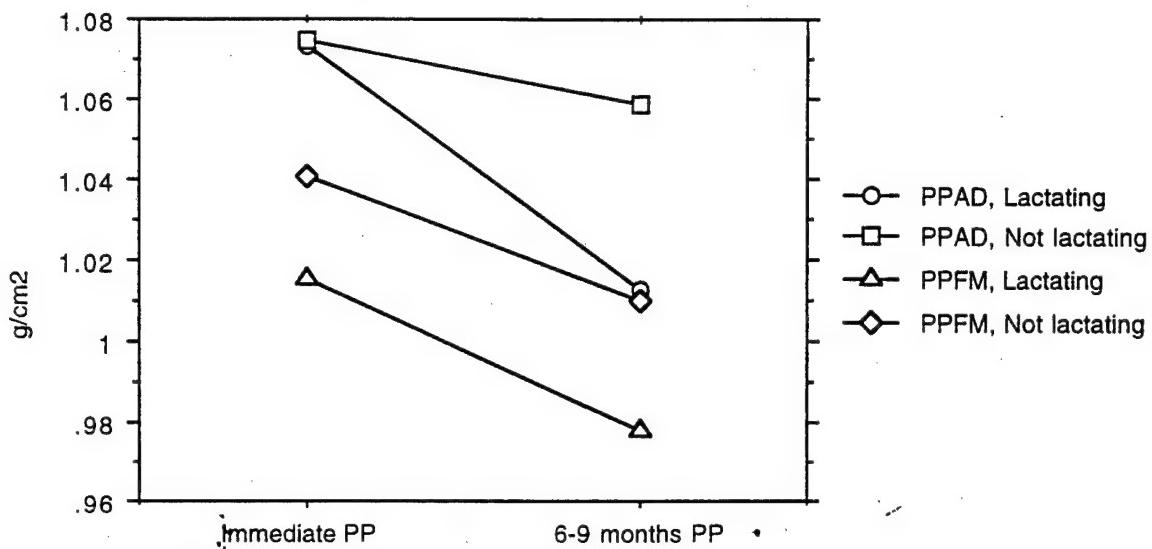
**APPENDIX 2**  
**BONE MINERAL DENSITY STRATIFIED BY GROUP AND LACTATION**



Full body BMD stratified by group and lactation. No inference testing due to small sample sizes in each group.

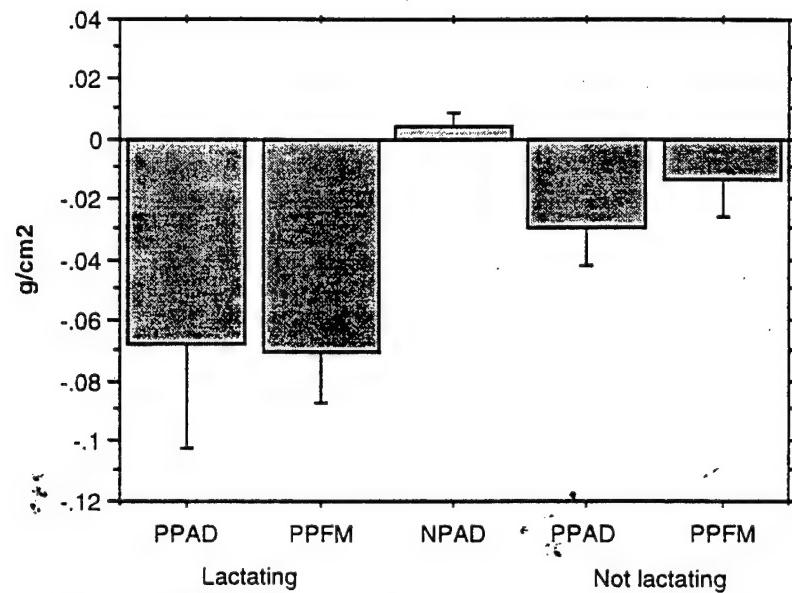


Lumbar spine BMD stratified by group and lactation. No inference testing due to small sample sizes in each group.

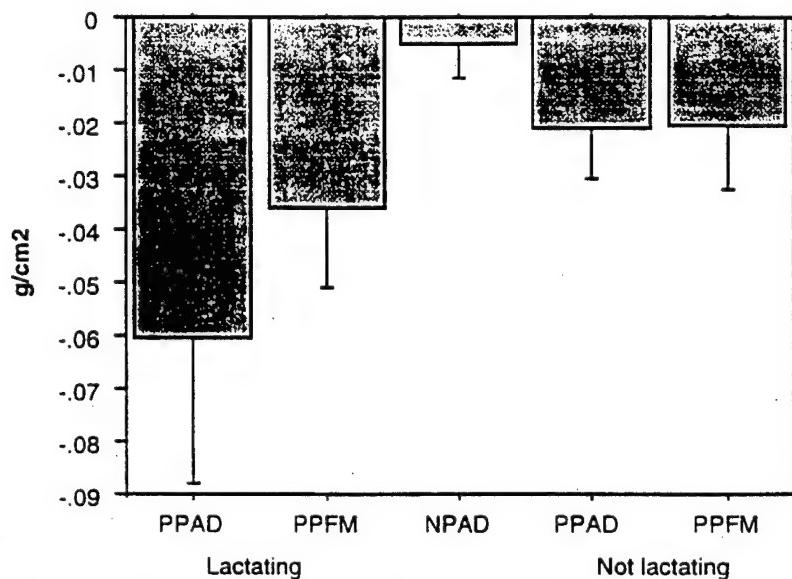


Femoral neck BMD stratified by group and lactation. No inference testing due to small sample sizes in each group.

**APPENDIX 3**  
**CHANGE IN BONE MINERAL DENSITY FOR ALL STUDY GROUPS DURING**  
**THE POSTPARTUM PERIOD**

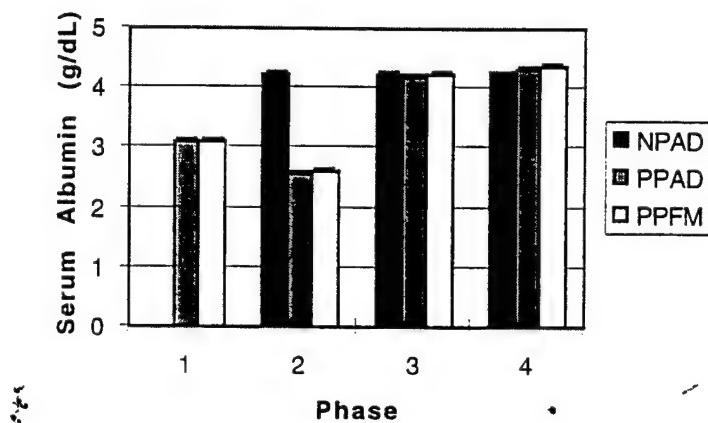


Change in lumbar spine BMD in postpartum soldiers and family members, and non-pregnant soldiers. Error bars are 95% confidence intervals.



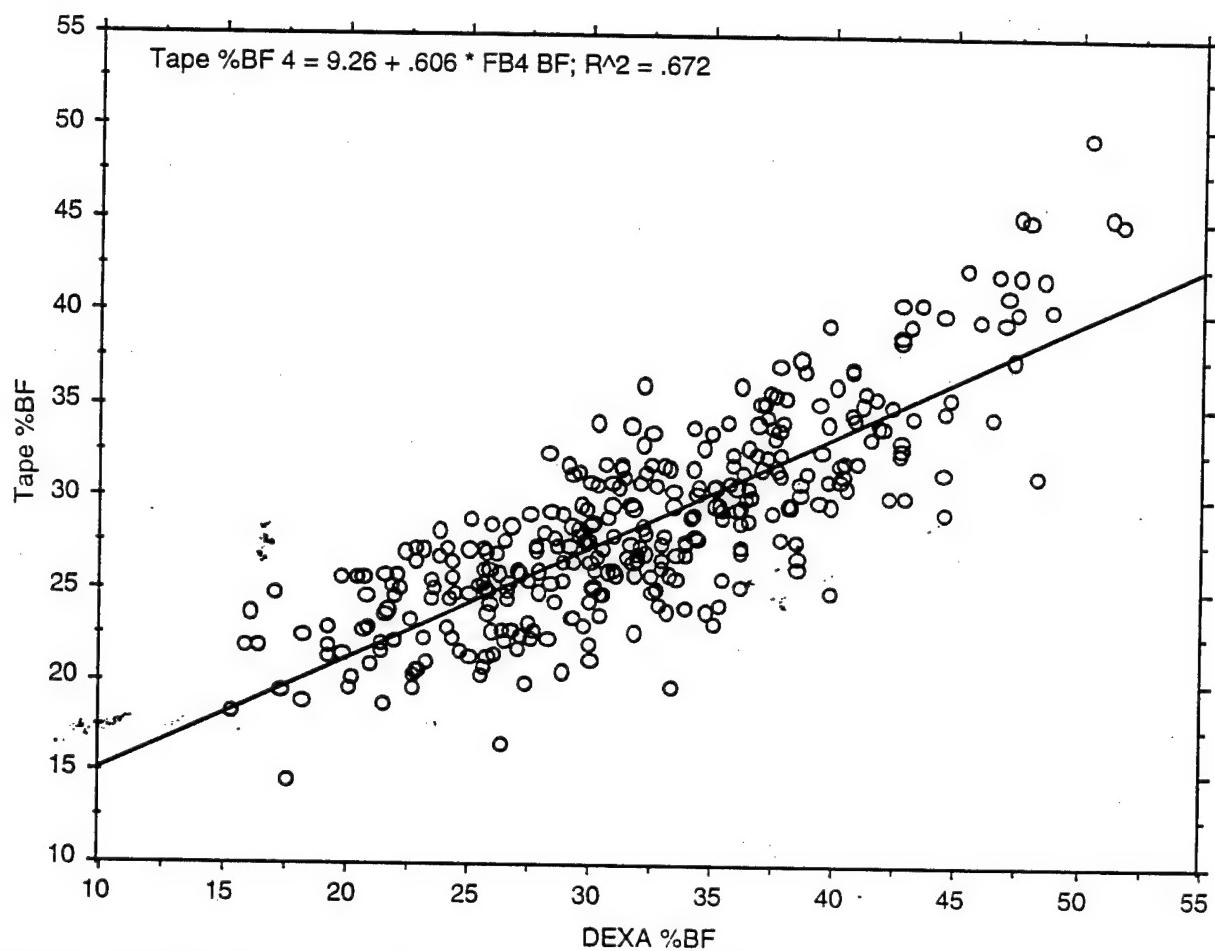
Change in femoral neck BMD in postpartum soldiers and family members, and non-pregnant soldiers. Error bars are 95% confidence intervals.

**APPENDIX 4**  
**SERUM ALBUMIN CONCENTRATIONS**

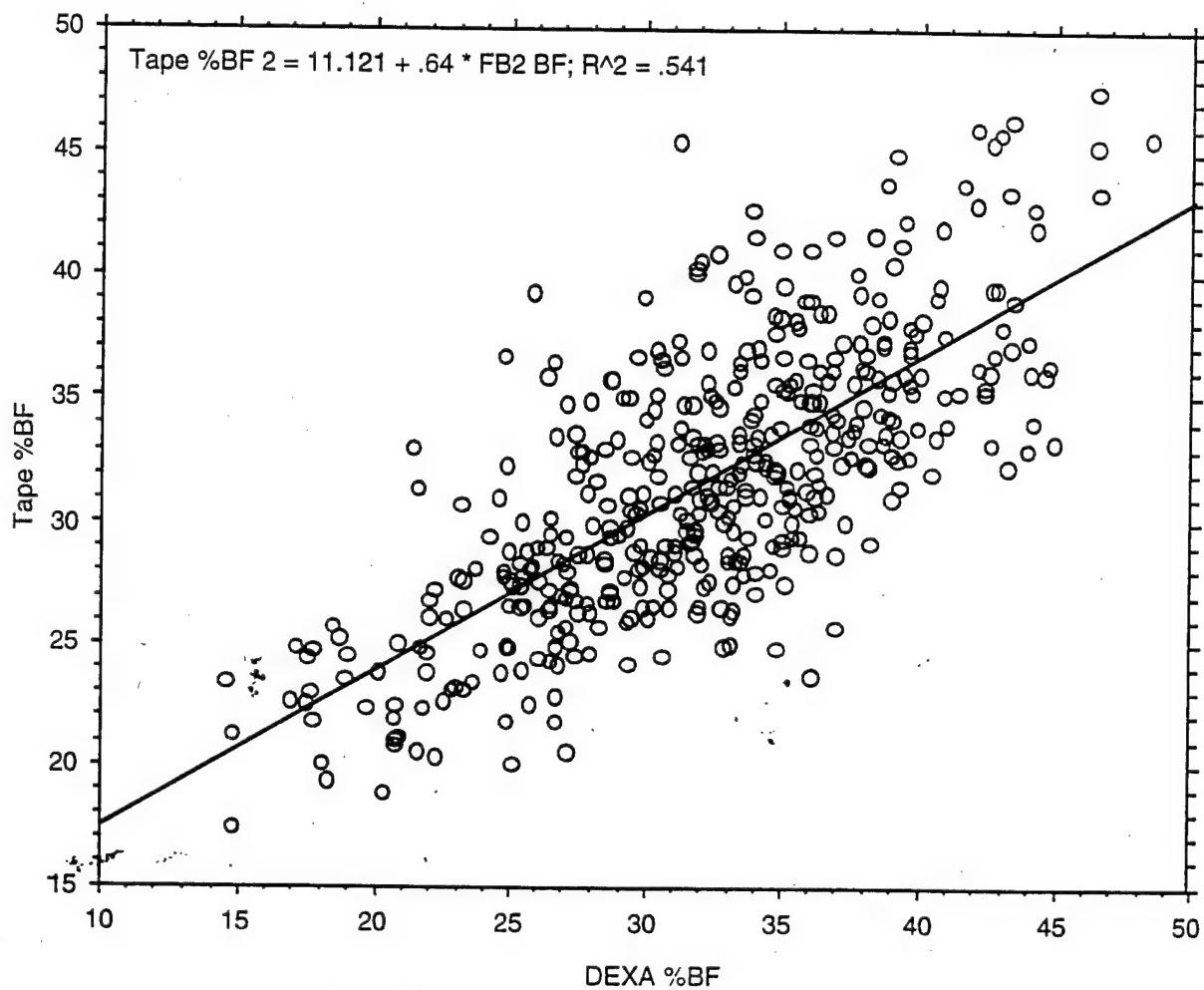


Serum albumin concentrations for all treatment groups at each phase of follow-up. Error bars are SE.

**APPENDIX 5**  
**CORRELATION BETWEEN DEXA AND US ARMY TAPE METHOD**  
**FOR DETERMINING BODY FAT**



Relationship between body fat as measured by DEXA and the US Army tape method 1-3 days postpartum.



Relationship between body fat as measured by DEXA and the US Army tape method 6-9 months postpartum.

**APPENDIX 6**  
**QUESTIONNAIRES**

Post-partum 1  
Pregnant Soldiers and Family Members

Subject Number: \_\_\_\_\_

Date: \_\_\_\_\_

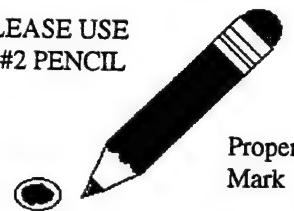
This questionnaire asks you some questions about your background, diet, activity level, and health habits. Your answers will help us determine the effect of pregnancy on performance, health and nutrition in women. This survey looks longer than it really is. It should only take you 30-45 minutes to complete. If you have any questions about this survey, please ask for help from the person who gave this survey to you. Please use a number 2 pencil to fill in the ovals. Thank you.

**BACKGROUND**

1. What is your age? \_\_\_\_\_ years

PLEASE USE  
A #2 PENCIL

2. Are you currently serving in the U.S. Army?



NO  
 YES

a. How are you related to your military sponsor?

Spouse  
 Daughter

If NO:

b. What is your sponsor's rank?

Retired

E	1	2	3	4	5	6	7	8	9
O	<input type="radio"/>								
WO	<input type="radio"/>								

c. Are you employed?

NO  
 YES

If YES:

a. What is your current rank?

E	1	2	3	4	5	6	7	8	9
O	<input type="radio"/>								
WO	<input type="radio"/>								

b. What is your current MOS? \_\_\_\_\_

3. Which ethnic group do you belong to?

- American Indian/Alaskan Native/Eskimo
- Asian/Pacific Islander
- Black/African
- Hispanic
- White/Caucasian, not of Hispanic origin
- Other: \_\_\_\_\_

0	1	2	3	4	5	6	7	8	9
subject number									

day									
0	1	2	3	4	5	6	7	8	9
month									

PLEASE DO NOT WRITE IN THIS BOX

0	1	2	3	4	5	6	7	8	9
age									
0	1	2	3	4	5	6	7	8	9
MOS									

4. What is the highest level of education you have completed?

- Some high school
- High school graduate
- Some college
- College graduate
- Post-graduate study
- Post-graduate degree

5. What is your current marital status?

- Married and currently living with spouse
- Married, but unaccompanied
- Divorced/Legally separated
- Single, not married

### SMOKING HISTORY BEFORE YOU FOUND OUT YOU WERE PREGNANT

6. Did you smoke 1 or more cigarettes in the MONTH BEFORE you found out you were pregnant?

NO  
 YES

a. Usually, how many days a week did you smoke? <1    1    2    3    4    5    6    7 days

- If YES:
- b. On those days, about how many cigarettes did you smoke per day? \_\_\_\_\_
  - c. How many years have you been smoking cigarettes? \_\_\_\_\_ years

7. Did you quit smoking BEFORE you found out you were pregnant?

- No, I never smoked
- Yes, I continued to smoke
- Yes, I quit smoking before I found out I was pregnant

a. How long ago did you quit smoking cigarettes?

12 months ago or less (\_\_\_\_\_ months)  
 Greater than 12 months ago (\_\_\_\_\_ years)

- If YES:
- b. How many days a week did you smoke? <1    1    2    3    4    5    6    7 days
  - c. On those days, about how many cigarettes did you smoke per day? \_\_\_\_\_
  - d. How many years did you smoke cigarettes before you quit? \_\_\_\_\_ years

6c  
years

0	1	2	3	4	5	6	7	8	9

quit  
years

0	1	2	3	4	5	6	7	8	9

0	1	2	3	4	5	6	7	8	9

6b cigs per day

quit months

7c cigs per day

7d years

Postpartum (1)

**SMOKING HISTORY AFTER YOU FOUND OUT YOU WERE PREGNANT**

8. Have you smoked 1 or more cigarettes after you FOUND OUT you were pregnant?

NO  
 YES

a. Usually, how many days a week do you smoke? <1     1     2     3     4     5     6     7 days

If YES:

b. On those days, about how many cigarettes do you smoke per day? \_\_\_\_\_

c. How many years have you been smoking cigarettes? \_\_\_\_\_ years

9. Have you quit smoking since you FOUND OUT you were pregnant?

No, I never smoked  
 Yes, I continue to smoke  
 Yes, I quit smoking since I found out I was pregnant

a. How long ago did you quit smoking cigarettes? \_\_\_\_\_ months

If YES:

b. How many days a week did you smoke? <1     1     2     3     4     5     6     7 days

c. On those days, about how many cigarettes did you smoke per day? \_\_\_\_\_

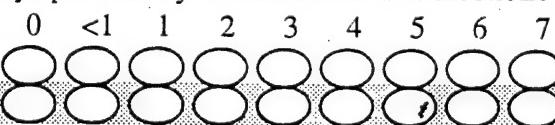
d. How many years did you smoke cigarettes before you quit? \_\_\_\_\_ years

**ALCOHOL USE**

10. Please indicate the average number of days per week you had AT LEAST ONE alcoholic drink (beer, wine, liquor) both the month BEFORE you found out you were pregnant and AFTER you found out you were pregnant. Please indicate the average number of drinks you drank on those days.

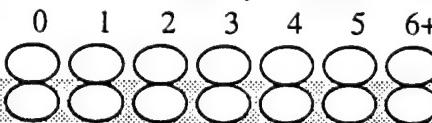
Average number of days per week you had at least one alcoholic drink

The month BEFORE you found out you were pregnant  
AFTER you found out you were pregnant



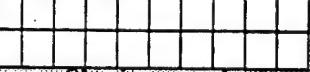
Average number of drinks you drank on those days

The month BEFORE you found out you were pregnant  
AFTER you found out you were pregnant



8c  
years

--	--	--	--	--	--	--	--	--	--

0 1 2 3 4 5 6 7 8 9  


8b cigs per day

--	--	--	--	--	--	--	--	--	--

0 1 2 3 4 5 6 7 8 9  


9d years

9c cigs  
per day

PLEASE DO NOT  
WRITE IN THIS BOX

**Postpartum (1)  
PRIOR PREGNANCIES**

11. Please fill in an oval under the appropriate number for each item listed below, as they apply to you.

Pregnancies, including this one Prior live births Miscarriages Living children Multiple birth pregnancies (twins, triplets, etc.)	0    1    2    3    4    5    6    7    8    9    >10
---	---

**EXERCISE IN WHICH YOU PARTICIPATED  
BEFORE YOU FOUND OUT YOU WERE PREGNANT**

12. A few physical activities are listed below. Read the list and fill in the oval under YES in front of any activities you did six months BEFORE you found out you were pregnant. Fill in the oval under NO in front of any activity you did not do six months BEFORE you found out you were pregnant. Next, go back to the activities where you filled in the oval under YES and fill in the ovals for the average number of days per week you did the activity and write in the number of minutes per day.

NO	YES	BEFORE YOU WERE PREGNANT	AVERAGE NUMBER OF DAYS PER WEEK							MINUTES PER DAY
			1	2	3	4	5	6	7	
<input type="checkbox"/>	<input type="checkbox"/>	Walking	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
<input type="checkbox"/>	<input type="checkbox"/>	Jog/Run	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
<input type="checkbox"/>	<input type="checkbox"/>	Strength training (free weights, nautilus, etc.)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
<input type="checkbox"/>	<input type="checkbox"/>	Stretching (flexibility) exercises	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
Other exercise or sports (list up to 2):			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
<input type="checkbox"/>	<input type="checkbox"/>	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____

**EXERCISE IN WHICH YOU PARTICIPATED AFTER  
YOU FOUND OUT YOU WERE PREGNANT**

13. A few activities are listed below, for EACH TRIMESTER of your pregnancy. Please fill in an oval under YES or NO for each activity for EACH TRIMESTER. Then go back and indicate the average number of days per week and the minutes per day you did the YES activities for EACH TRIMESTER.

NO	YES	FIRST TRIMESTER	AVERAGE NUMBER OF DAYS PER WEEK							MINUTES PER DAY
			1	2	3	4	5	6	7	
<input type="checkbox"/>	<input type="checkbox"/>	Walking	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
<input type="checkbox"/>	<input type="checkbox"/>	Jog/Run	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
<input type="checkbox"/>	<input type="checkbox"/>	Strength training (free weights, nautilus, etc.)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
<input type="checkbox"/>	<input type="checkbox"/>	Stretching (flexibility) exercises	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
Other exercise or sports (list up to 2):			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
<input type="checkbox"/>	<input type="checkbox"/>	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____

Postpartum (1)

13 (continued).

NO	YES	SECOND TRIMESTER	AVERAGE NUMBER OF DAYS PER WEEK							MINUTES PER DAY	
			1	2	3	4	5	6	7		
<input type="radio"/>	<input type="radio"/>	Walking	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	Jog/Run	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	Strength training (free weights, nautilus, etc.)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	Stretching (flexibility) exercises	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other exercise or sports (list up to 2):			<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

NO	YES	THIRD TRIMESTER	AVERAGE NUMBER OF DAYS PER WEEK							MINUTES PER DAY
			1	2	3	4	5	6	7	
<input type="radio"/>	<input type="radio"/>	Walking	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	Jog/Run	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	Strength training (free weights, nautilus, etc.)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	Stretching (flexibility) exercises	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other exercise or sports (list up to 2):			<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**PREGNATAL CLASSES ATTENDED**

14. Please indicate the number of prenatal classes you attended during your CURRENT PREGNANCY in each of your trimesters. If you did not attend any during a trimester, please fill in the oval under zero. If you attended more than 12 during a trimester, please write in the number of classes under OTHER.

First Trimester (1-3 months)	0	1	2	3	4	5	6	7	8	9	10	11	>12
Second Trimester (4-6 months)	<input type="radio"/>												
Third Trimester (7-9 months)	<input type="radio"/>												

15. Have you attended prenatal classes previously from a prior pregnancy?

NO       YES

If YES, about how many classes did you attend? \_\_\_\_\_

16. Were you given any information on nutrition during the first trimester of your CURRENT pregnancy?

NO       YES

PLEASE DO NOT WRITE IN THIS BOX

15A

0	1	2	3	4	5	6	7	8	9
---	---	---	---	---	---	---	---	---	---

## DIET HISTORY AND HEALTH HABITS

17. Are you on a special diet? Please fill in no more than two ovals.

No  
 Weight Loss  
 Weight Gain

Low Fat  
 Vegetarian  
 High Protein

High Carbohydrate  
 Low Cholesterol  
 Low Salt

18. The following section is about your eating habits during your CURRENT pregnancy. Thinking back over the past month, indicate how often you ate the foods listed on the next 4 pages.

First, indicate whether your serving size was small, medium or large. (A small portion is about one-half the medium serving size shown, or less; a large portion is about one-and-a-half times as much, or more.)

Then, fill in an oval for the number of times you ate each item and fill an oval for the time period. For example, you may have eaten bananas twice a week (fill in a bubble under "2" and an oval under "week"). If you did not eat the food, fill in the oval under "none". Please DO NOT SKIP foods. Please BE CAREFUL which oval you fill in. It will make a big difference if you say "Hamburger once a day" when you mean "Hamburger once a week"!

Please look at the example below. This person:

- 1) ate a medium serving of cantaloupe once a week
- 2) had 1/2 a grapefruit about twice during the month
- 3) had a large hamburger or cheeseburger or meat loaf about four times a week
- 4) did not eat winter squash.

	MEDIUM SERVING	YOUR SERVING	NUMBER OF TIMES:							PER:			
			none	1	2	3	4	5	6	7	day	week	month
Cantaloupe (in season)	1/4 medium	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Grapefruit	(1/2)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Hamburger, Cheeseburger,	1/2 cup	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Meat Loaf	1 medium	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Winter Squash, Baked Squash	1/2 cup	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>					

Since the number of times is limited to 7, you may have to rethink your answer. For example, if you feel that you ate apples 8 times last month, it is the same as 2 times a week or 14 times a week is the same as 2 a day.

If you ate something MORE THAN 7 TIMES A DAY, please write in the food item on an available blank line at the bottom of the section and fill in an oval for the number of times a DAY you ate the item.

# Postpartum (1)



	MEDIUM SERVING	YOUR SERVING	NUMBER OF TIMES:							COST PER: \$							
			S	M	L	none	1	2	3		4	5	6	7			
FRUITS, VEGETABLES																	
Apples, applesauce, pears	(1) or 1/2 cup																
Cantaloupe (in season)	1/4 medium																
Oranges	1 medium																
Orange juice or grapefruit juice	6oz glass																
Grapefruit	(1/2)																
Other fruit juices, fortified fruit drinks	6oz glass																
Beans such as, baked beans, pintos, kidney, limas or in Chili	3/4 cup																
Tomatoes, tomato juice	(1) or 6oz																
Broccoli	1/2 cup																
Spinach	1/2 cup																
Mustard greens, turnip greens, collards	1/2 cup																
Cole slaw, cabbage, sauerkraut	1/4 cup																
Carrots or mixed vegetables containing carrots	1/2 cup																
Green salad	1 med. bowl																
Salad dressing, mayonnaise (including on sandwiches)	2 Tablespoon																
French fries and fried potatoes	3/4 cup																
Sweet potatoes, yams	1/2 cup																
Other potatoes, incl. boiled, baked, potato salad, mashed	(1) or 1/2 cup																
Rice	3/4 cup																
FRUITS, VEGETABLES EATEN MORE THAN SEVEN TIMES A DAY																	
			S	M	L	8	9	10	11	12	13	14	15	16	17	18	19
1																	
2																	
3																	
4																	

PLEASE DO NOT WRITE IN THIS BOX

0 1 2 3 4 5 6 7 8 9

0 1 2 3 4 5 6 7 8 9

0 1 2 3 4 5 6 7 8 9

0 1 2 3 4 5 6 7 8 9

1																		
---	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

2																		
---	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

3																		
---	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

4																		
---	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

# Postpartum (1)

	MEDIUM SERVING	YOUR SERVING	NUMBER OF TIMES:							PER:				
<b>MEAT, LUNCH ITEMS</b>														
Hamburgers, cheeseburgers, meat loaf	1 medium	S M L	none	1	2	3	4	5	6	7	day	week	month	
Beef - steaks, roasts	4oz													
Beef stew or pot pie with carrots, other vegetables	1 cup													
Liver, including chicken livers	4oz													
Pork, including chops, roasts	4oz (2 chops)													
Fried chicken	2sm/lrg piece													
Chicken or turkey, roasted, stewed or broiled	2sm/lrg piece													
Fried fish or fish sandwich	4oz or 1 sand													
Other fish, broiled, baked	4oz													
Spaghetti, Lasagna, other pastas with tomato sauce	1 cup													
Hot dogs	2 dogs													
Ham, lunch meats	2 slices													
Vegetable soup, vegetable beef, minestrone, tomato soup	1 med. bowl													
<b>MEAT, LUNCH ITEMS EATEN MORE THAN SEVEN TIMES A DAY</b>														
1 _____		S M L	8 9 10 11 12 13 14 15 16 17 18 19	NUMBER OF TIMES PER DAY:										
2 _____														
<b>BREAKFAST FOODS</b>														
High fiber, bran or granola cereals, shredded wheat	1 med. bowl	S M L	none	1	2	3	4	5	6	7	day	week	month	
Highly fortified cereals, such as Product 19, Total or Most	1 med. bowl													
Other cold cereals, such as Corn Flakes, Rice Krispies	1 med. bowl													
Cooked cereals	1 med. bowl													
Eggs (1 egg = small serv)	2 eggs													
Bacon	2 slices													
Sausage	2 patties/links													
<b>BREAKFAST FOODS EATEN MORE THAN SEVEN TIMES A DAY</b>														
3 _____		S M L	8 9 10 11 12 13 14 15 16 17 18 19	NUMBER OF TIMES PER DAY:										
4 _____														

**PLEASE DO NOT WRITE IN THIS BOX**

0	1	2	3	4	5	6	7	8	9
1	2	3	4	5	6	7	8	9	

0	1	2	3	4	5	6	7	8	9
2	3	4	5	6	7	8	9		

0	1	2	3	4	5	6	7	8	9
3	4	5	6	7	8	9			

0	1	2	3	4	5	6	7	8	9
4	5	6	7	8	9				

# Postpartum (1)

	MEDIUM SERVING	YOUR SERVING	NUMBER OF TIMES:							PER:							
<b>BREADS, SALTY SNACKS, SPREADS</b>			S	M	L	none	1	2	3	4	5	6	7	day	week	month	
White bread (including sandwiches), bagels, etc., crackers	2 slices, 3 crackers		<input type="radio"/>														
Dark bread, including whole wheat, rye, pumpernickel	2 slices		<input type="radio"/>														
Corn bread, corn muffins, corn tortillas	1 med. piece		<input type="radio"/>														
Salty snacks (chips, popcorn, etc.)	2 handfuls		<input type="radio"/>														
Peanuts, peanut butter	2 Tablespoon		<input type="radio"/>														
Magarine on bread or rolls	2 pats		<input type="radio"/>														
Butter on bread or rolls	2 pats		<input type="radio"/>														
<b>BREADS, ETC. EATEN MORE THAN SEVEN TIMES A DAY</b>			S	M	L	8	9	10	11	12	13	14	15	16	17	18	19
1			<input type="radio"/>														
2			<input type="radio"/>														
3			<input type="radio"/>														
4			<input type="radio"/>														
<b>SWEETS</b>			S	M	L	none	1	2	3	4	5	6	7	day	week	month	
Ice cream	1 scoop		<input type="radio"/>														
Doughnuts, cookies, cakes, pastry	1pc or 3 cook		<input type="radio"/>														
Pies	1 med. slice		<input type="radio"/>														
Chocolate candy	sm bar / 1oz		<input type="radio"/>														
<b>SWEETS EATEN MORE THAN SEVEN TIMES A DAY</b>			S	M	L	8	9	10	11	12	13	14	15	16	17	18	19
5			<input type="radio"/>														
6			<input type="radio"/>														

0 1 2 3 4 5 6 7 8 9

0 1 2 3 4 5 6 7 8 9

PLEASE DO NOT WRITE IN THIS BOX

0 1 2 3 4 5 6 7 8 9

0 1 2 3 4 5 6 7 8 9

0 1 2 3 4 5 6 7 8 9

0 1 2 3 4 5 6 7 8 9

3

4

5

6

**Postpartum (1)**

	MEDIUM SERVING	YOUR SERVING	NUMBER OF TIMES:							PER:				
DAIRY PRODUCTS, BEVERAGES		S M L	none	1	2	3	4	5	6	7	day	week	month	
Cheeses and cheese spreads, not including cottage cheese	2 slices or 2oz													
Whole milk and beverages with whole milk (not incl. on cereal)	8oz glass													
2% milk and beverages with 2% milk (not including on cereal)	8oz glass													
Skim milk, 1% milk or butter- milk (not including on cereal)	8oz glass													
Regular soft drinks (not diet)	12oz can													
Beer	12oz can													
Wine	1 med. glass													
Liquor	1 shot													
Milk or cream in coffee or tea	1 Tablespoon													
Sugar in coffee or tea, or on cereal	2 teaspoon													
<b>DAIRY, BEVERAGES EATEN MORE THAN SEVEN TIMES A DAY</b>		S M L	NUMBER OF TIMES PER DAY:											
1			8	9	10	11	12	13	14	15	16	17	18	19
2														
3														
4														

**PLEASE DO NOT WRITE IN THIS BOX**

0 1 2 3 4 5 6 7 8 9

0 1 2 3 4 5 6 7 8 9

0 1 2 3 4 5 6 7 8 9

0 1 2 3 4 5 6 7 8 9

1	2	3	4

1	2	3	4

1	2	3	4

1	2	3	4

## Postpartum (1)

The following questions are about your eating habits during your CURRENT pregnancy.

19. How often do you eat the skin on chicken?  Seldom/Never  Sometimes  Often/Always

How often do you eat the fat on meat?  Seldom/Never  Sometimes  Often/Always

How often do you add salt to your food?  Seldom/Never  Sometimes  Often/Always

How often do you add pepper to your food?  Seldom/Never  Sometimes  Often/Always

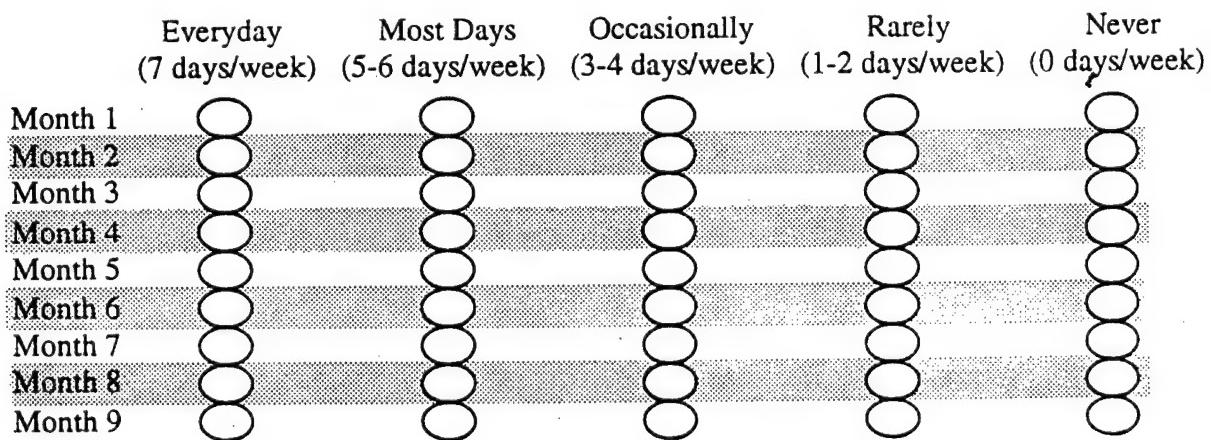
20. Not counting salad or potatoes, about how many servings of vegetables do you eat per day or per week?

VEGETABLES      none 1 2 3 4 5 6 7 8 9 per DAY or WEEK

21. Not counting juices, about how many pieces of fruit do you eat per day or per week?

FRUITS      none 1 2 3 4 5 6 7 8 9 per DAY or WEEK

22. Please indicate how often you took IRON PILLS during each month of your pregnancy. Please fill in one oval for each month.



# Postpartum (1)

23. During your CURRENT pregnancy, have you taken any vitamins or minerals?

NO

YES, fairly regularly

YES, but not regularly

If YES:

If YES, please indicate the type and number of pills per Day or Week.

	none	1	2	3	4	5	6	7	8+	Day	Week
Multiple Vitamin Pills	<input type="radio"/>										
Other Vitamin/Mineral Pills	none	1	2	3	4	5	6	7	8+	Day	Week
Vitamin A	<input type="radio"/>										
Vitamin C	<input type="radio"/>										
Vitamin E	<input type="radio"/>										
Calcium or dolomite	<input type="radio"/>										
Iron	<input type="radio"/>										
Folate (B6)	<input type="radio"/>										

For the Other Vitamins, please indicate below how many milligrams or IU's per pill you take.

Vitamin A \_\_\_\_\_ IU per pill  
 Vitamin C \_\_\_\_\_ mg per pill  
 Vitamin E \_\_\_\_\_ IU per pill  
 Calcium or dolomite \_\_\_\_\_ mg per pill  
 Iron \_\_\_\_\_ mg per pill  
 Folate (B6) \_\_\_\_\_ mg per pill

Other Supplements (please fill in all that apply)

Yeast       Zinc       Cod Liver Oil  
 Selenium       Beta-Carotene       Other: \_\_\_\_\_

Please list the brand and type of multiple vitamin/mineral you usually take: \_\_\_\_\_

Please take a moment to fill in any questions you may have skipped. Thank you for taking the time to fill out this information.

PLEASE DO NOT WRITE IN THIS BOX

0 1 2 3 4 5 6 7 8 9


other

0 1 2 3 4 5 6 7 8 9


vitamins

Subject Number


A

C

E

Ca

0 1 2 3 4 5 6 7 8 9

0 1 2 3 4 5 6 7 8 9



## Post Partum Soldiers and Family Members

Subject Number: \_\_\_\_\_

Date: \_\_\_\_\_

This questionnaire is similar to the one you answered last time. It will ask you some questions about diet, activity level and health habits. It will take about 20 - 30 minutes. If you have any questions about this survey, please ask for help from the person who gave this survey to you. Please use a number two pencil to fill in the ovals. Thank you.

## PHYSICAL ACTIVITIES AND SPORTS

1. A few activities are listed below for EACH WEEK since you delivered your baby. Please fill in an oval under YES or NO for each activity for EACH WEEK since you delivered your baby. Then go back and indicate the average number of days per week and the minutes per day you did the YES activities for EACH WEEK since you delivered your baby.

NO	YES	WEEK 1	DAYS PER WEEK							MINUTES PER DAY	
			1	2	3	4	5	6	7		
<input type="radio"/>	<input checked="" type="radio"/>	Walking	<input type="radio"/>								
<input type="radio"/>	<input checked="" type="radio"/>	Jog/Run	<input type="radio"/>								
<input type="radio"/>	<input checked="" type="radio"/>	Strength training (free weights, nautilus, etc.)	<input type="radio"/>								
<input type="radio"/>	<input checked="" type="radio"/>	Stretching (flexibility) exercises	<input type="radio"/>								
Other exercise or sports (list up to 2):											
<input type="radio"/>	<input checked="" type="radio"/>		<input type="radio"/>								
<input type="radio"/>	<input checked="" type="radio"/>		<input type="radio"/>								

NO	YES	WEEK 2	DAYS PER WEEK							MINUTES PER DAY	
			1	2	3	4	5	6	7		
<input type="radio"/>	<input checked="" type="radio"/>	Walking	<input type="radio"/>								
<input type="radio"/>	<input checked="" type="radio"/>	Jog/Run	<input type="radio"/>								
<input type="radio"/>	<input checked="" type="radio"/>	Strength training (free weights, nautilus, etc.)	<input type="radio"/>								
<input type="radio"/>	<input checked="" type="radio"/>	Stretching (flexibility) exercises	<input type="radio"/>								
Other exercise or sports (list up to 2):											
<input type="radio"/>	<input checked="" type="radio"/>		<input type="radio"/>								
<input type="radio"/>	<input checked="" type="radio"/>		<input type="radio"/>								

NO	YES	WEEK 3	DAYS PER WEEK							MINUTES PER DAY	
			1	2	3	4	5	6	7		
<input type="radio"/>	<input checked="" type="radio"/>	Walking	<input type="radio"/>								
<input type="radio"/>	<input checked="" type="radio"/>	Jog/Run	<input type="radio"/>								
<input type="radio"/>	<input checked="" type="radio"/>	Strength training (free weights, nautilus, etc.)	<input type="radio"/>								
<input type="radio"/>	<input checked="" type="radio"/>	Stretching (flexibility) exercises	<input type="radio"/>								
Other exercise or sports (list up to 2):											
<input type="radio"/>	<input checked="" type="radio"/>		<input type="radio"/>								
<input type="radio"/>	<input checked="" type="radio"/>		<input type="radio"/>								

PLEASE DO NOT WRITE IN THIS BOX

subject  
number

0	1	2	3	4	5	6	7	8	9

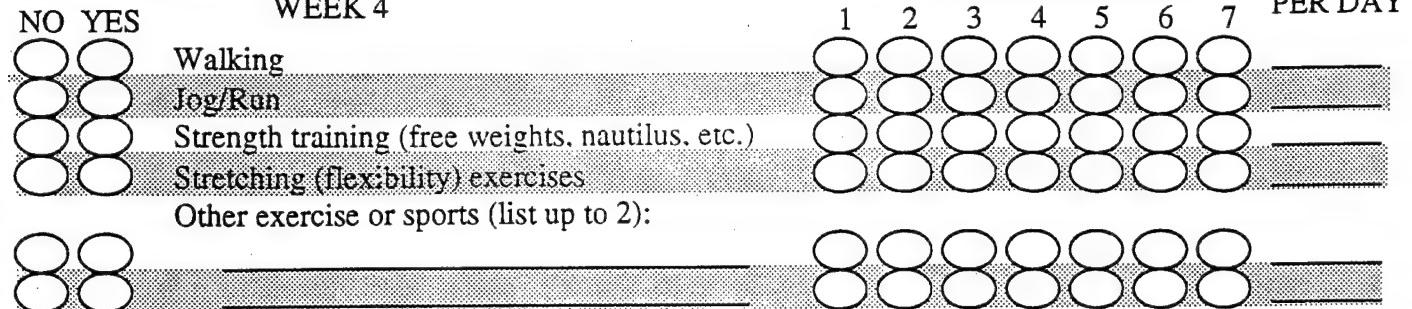
0	1	2	3	4	5	6	7	8	9

0	1	2	3	4	5	6	7	8	9

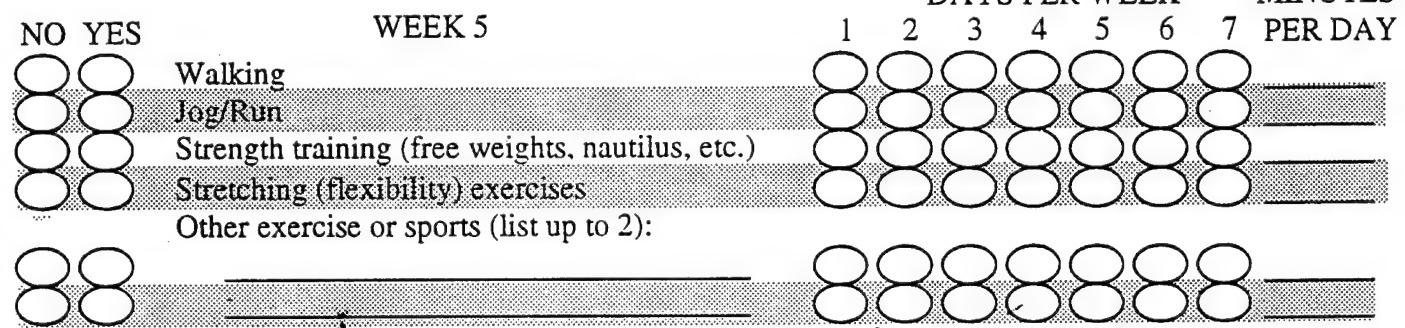
## Post-partum 2

1 (continued).

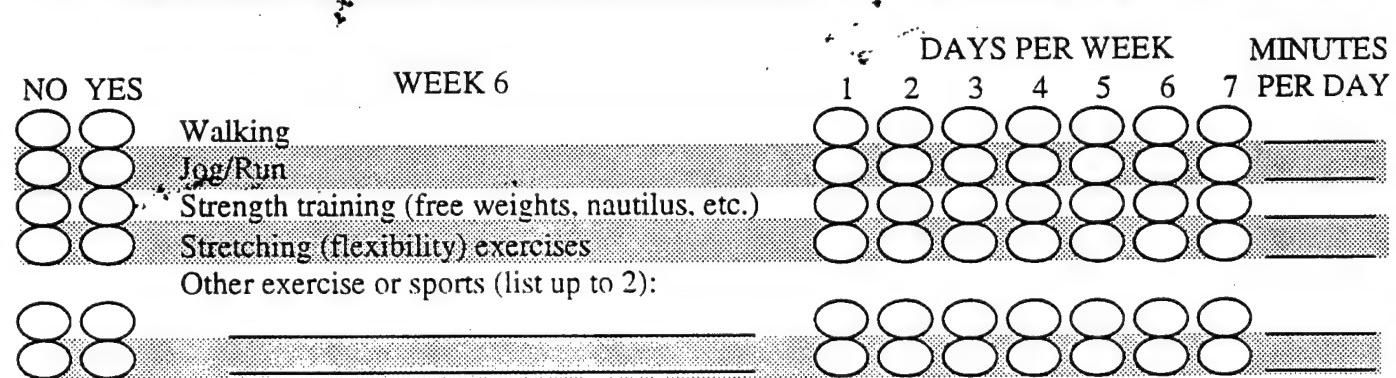
WEEK 4



WEEK 5



WEEK 6



2. Are you currently using birth control?

 NO YES

If YES, what method or type are you using? \_\_\_\_\_

3. What percentage of your baby's feedings are breast milk?

- No breast milk
- 25% breast milk
- 50% breast milk
- 75% breast milk
- 100% breast milk

4. How many weeks after birth did your baby begin to regularly eat food or formula other than breast milk?

Number of weeks after birth

1	2	3	4	5	6
---	---	---	---	---	---

2 a

0	1	2	3	4	5	6	7	8

PLEASE DO NOT  
WRITE IN THIS BOX

## DIET HISTORY AND HEALTH HABITS

5. Are you on a special diet? Please fill in no more than two ovals.

No  
 Weight Loss  
 Weight Gain

Low Fat  
 Vegetarian  
 High Protein

High Carbohydrate  
 Low Cholesterol  
 Low Salt

6. The following section is about your eating habits since you DELIVERED your baby. Thinking back over the past six weeks, indicate how often you ate the foods listed on the next 4 pages.

First, indicate whether your serving size was small, medium or large. (A small portion is about one-half the medium serving size shown, or less; a large portion is about one-and-a-half times as much, or more.)

Then, fill in an oval for the number of times you ate each item and fill an oval for the time period. For example, you may have eaten bananas twice a week (fill in a bubble under "2" and an oval under "week"). If you did not eat the food, fill in the oval under "none". Please DO NOT SKIP foods. Please BE CAREFUL which oval you fill in. It will make a big difference if you say "Hamburger once a day" when you mean "Hamburger once a week"!

Please look at the example below. This person:

- 1) ate a medium serving of cantaloupe once a week
- 2) had 1/2 a grapefruit about twice during the month
- 3) had a large hamburger or cheeseburger or meat loaf about four times a week
- 4) did not eat winter squash.

	MEDIUM SERVING	YOUR SERVING	NUMBER OF TIMES:							PER:			
			none	1	2	3	4	5	6	7	day	week	month
Cantaloupe (in season)	1/4 medium	S M L	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Grapefruit	(1/2)		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Hamburger, Cheeseburger, Meat Loaf	1/2 cup		<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>							
Winter Squash, Baked Squash	1 medium		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	1/2 cup		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Since the number of times is limited to 7, you may have to rethink your answer. For example, if you feel that you ate apples 8 times last month, it is the same as 2 times a week or 14 times a week is the same as 2 a day.

If you ate something MORE THAN 7 TIMES A DAY, please write in the food item on an available blank line at the bottom of the section and fill in an oval for the number of times a DAY you ate the item.

	MEDIUM SERVING	YOUR SERVING	NUMBER OF TIMES:							PER:			
		S M L	none	1	2	3	4	5	6	7	day	week	month
FRUITS, VEGETABLES													
Apples, applesauce, pears	(1) or 1/2 cup												
Cantaloupe (in season)	1/4 medium												
Oranges	1 medium												
Orange juice or grapefruit juice	6oz. glass												
Grapefruit	(1/2)												
Other fruit juices, fortified fruit drinks	6oz. glass												
Beans such as, baked beans, pintos, kidney, limas or in Chili	3/4 cup												
Tomatoes, tomato juice	(1) or 6oz.												
Broccoli	1/2 cup												
Spinach	1/2 cup												
Mustard greens, turnip greens, collards	1/2 cup												
Cole slaw, cabbage, sauerkraut	1/2 cup												
Carrots or mixed vegetables containing carrots	1/2 cup												
Green salad	1 med. bowl												
Salad dressing, mayonnaise (including on sandwiches)	2 Tablespoon												
French fries and fried potatoes	3/4 cup												
Sweet potatoes, yams	1/2 cup												
Other potatoes, incl. boiled, baked, potato salad, mashed	(1) or 1/2 cup												
Rice	3/4 cup												
FRUITS, VEGETABLES EATEN MORE THAN SEVEN TIMES A DAY			S M L	NUMBER OF TIMES PER DAY:									
1				8	9	10	11	12	13	14	15	16	17
2													
3													
4													

PLEASE DO NOT WRITE IN THIS BOX

0 1 2 3 4 5 6 7 8 9

0 1 2 3 4 5 6 7 8 9

0 1 2 3 4 5 6 7 8 9

0 1 2 3 4 5 6 7 8 9

1									
2									
3									
4									

1									
2									
3									
4									

1									
2									
3									
4									

1									
2									
3									
4									

## Post-partum 2

	MEDIUM SERVING	YOUR SERVING	NUMBER OF TIMES:							PER:	
MEAT, LUNCH ITEMS		S M L	none	1	2	3	4	5	6	7	day week month
Hamburgers, cheeseburgers, meat loaf	1 medium	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>								
Beef - steaks, roasts	4oz	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>								
Beef stew or pot pie with carrots, other vegetables	1 cup	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>								
Liver, including chicken livers	4oz	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>								
Pork, including chops, roasts	4oz (2 chops) 2sm/1lg piece	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>								
Fried chicken	2sm/1lg piece	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>								
Chicken or turkey, roasted, stewed or broiled	2sm/1lg piece	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>								
Fried fish or fish sandwich	4oz or 1 sand	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>								
Other fish, broiled, baked	4oz	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>								
Spaghetti, lasagna, other pasta with tomato sauce	1 cup	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>								
Hot dogs	2 dogs	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>								
Ham, lunch meats	2 slices	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>								
Vegetable soup, vegetable beef, minestrone, tomato soup	1 med. bowl	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>								
MEAT, LUNCH ITEMS EATEN MORE THAN SEVEN TIMES A DAY		S M L	NUMBER OF TIMES PER DAY:								
1 _____		<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	19								
2 _____		<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	19								
BREAKFAST FOODS		S M L	none	1	2	3	4	5	6	7	day week month
High fiber, bran or granola cereals, shredded wheat	1 med. bowl	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>								
Highly fortified cereals, such as Product 19, Total or Most	1 med. bowl	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>								
Other cold cereals, such as Corn Flakes, Rice Krispies	1 med. bowl	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>								
Cooked cereals	1 med. bowl	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>								
Eggs (1 egg = small serv)	2 eggs	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>								
Bacon	2 slices	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>								
Sausage	2 patties/links	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>								
BREAKFAST FOODS EATEN MORE THAN SEVEN TIMES A DAY		S M L	NUMBER OF TIMES PER DAY:								
3 _____		<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	19								
4 _____		<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	19								

PLEASE DO NOT WRITE IN THIS BOX

0 1 2 3 4 5 6 7 8 9

0 1 2 3 4 5 6 7 8 9

0 1 2 3 4 5 6 7 8 9

0 1 2 3 4 5 6 7 8 9

1  
         2  
         3  
         4

## Post-partum 2

	MEDIUM SERVING	YOUR SERVING	NUMBER OF TIMES:							PER:				
BREADS, SALTY SNACKS, SPREADS		S M L	none	1	2	3	4	5	6	7	day	week	month	
White bread (including sandwiches), bagels, etc., crackers	2 slices, 3 crackers	<input type="radio"/> <input type="radio"/> <input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
Dark bread, including whole wheat, rye, pumpernickel	2 slices	<input type="radio"/> <input type="radio"/> <input type="radio"/>												
Corn bread, corn muffins, corn tortillas	1 med. piece	<input type="radio"/> <input type="radio"/> <input type="radio"/>												
Salty snacks (chips, popcorn, etc.)	2 handfuls	<input type="radio"/> <input type="radio"/> <input type="radio"/>												
Peanuts, peanut butter	2 Tablespoon	<input type="radio"/> <input type="radio"/> <input type="radio"/>												
Magarine on bread or rolls	2 pats	<input type="radio"/> <input type="radio"/> <input type="radio"/>												
Butter on bread or rolls	2 pats	<input type="radio"/> <input type="radio"/> <input type="radio"/>												
BREADS, ETC. EATEN MORE THAN SEVEN TIMES A DAY		S M L	NUMBER OF TIMES PER DAY:											
1		<input type="radio"/> <input type="radio"/> <input type="radio"/>												
2		<input type="radio"/> <input type="radio"/> <input type="radio"/>												
3		<input type="radio"/> <input type="radio"/> <input type="radio"/>												
4		<input type="radio"/> <input type="radio"/> <input type="radio"/>												
SWEETS		S M L	none	1	2	3	4	5	6	7	day	week	month	
Ice cream	1 scoop	<input type="radio"/> <input type="radio"/> <input type="radio"/>												
Doughnuts, cookies, cakes, pastry	1pc or 3 cook	<input type="radio"/> <input type="radio"/> <input type="radio"/>												
Pies	1 med. slice	<input type="radio"/> <input type="radio"/> <input type="radio"/>												
Chocolate candy	sm bar / 1oz	<input type="radio"/> <input type="radio"/> <input type="radio"/>												
SWEETS EATEN MORE THAN SEVEN TIMES A DAY		S M L	8	9	10	11	12	13	14	15	16	17	18	19
5		<input type="radio"/> <input type="radio"/> <input type="radio"/>												
6		<input type="radio"/> <input type="radio"/> <input type="radio"/>												

0 1 2 3 4 5 6 7 8 9

0 1 2 3 4 5 6 7 8 9

PLEASE DO NOT WRITE IN THIS BOX

1														
2														

3														
4														

5														
6														

7														
8														

	MEDIUM SERVING	YOUR SERVING	NUMBER OF TIMES:							PER:					
DAIRY PRODUCTS, BEVERAGES		S M L	none	1	2	3	4	5	6	7	day week month				
Cheeses and cheese spreads, not including cottage cheese	2 slices or 2oz	<input type="radio"/> <input type="radio"/> <input type="radio"/>													
Whole milk and beverages with whole milk (not incl. on cereal)	8oz glass	<input type="radio"/> <input type="radio"/> <input type="radio"/>													
2% milk and beverages with 2% milk (not including on cereal)	8oz glass	<input type="radio"/> <input type="radio"/> <input type="radio"/>													
Skim milk, 1% milk or butter- milk (not including on cereal)	8oz glass	<input type="radio"/> <input type="radio"/> <input type="radio"/>													
Regular soft drinks (not diet)	12oz can	<input type="radio"/> <input type="radio"/> <input type="radio"/>													
Beer	12oz can	<input type="radio"/> <input type="radio"/> <input type="radio"/>													
Wine	1 med. glass	<input type="radio"/> <input type="radio"/> <input type="radio"/>													
Liquor	1 shot	<input type="radio"/> <input type="radio"/> <input type="radio"/>													
Milk or cream in coffee or tea	1 Tablespoon	<input type="radio"/> <input type="radio"/> <input type="radio"/>													
Sugar in coffee or tea, or on cereal	2 teaspoon	<input type="radio"/> <input type="radio"/> <input type="radio"/>													
<b>DAIRY, BEVERAGES EATEN MORE THAN SEVEN TIMES A DAY</b>			<b>NUMBER OF TIMES PER DAY:</b>												
1 _____	S	M	L	8	9	10	11	12	13	14	15	16	17	18	19
2 _____	<input type="radio"/> <input type="radio"/> <input type="radio"/>														
3 _____	<input type="radio"/> <input type="radio"/> <input type="radio"/>														
4 _____	<input type="radio"/> <input type="radio"/> <input type="radio"/>														

PLEASE DO NOT WRITE IN THIS BOX

0 1 2 3 4 5 6 7 8 9

0 1 2 3 4 5 6 7 8 9

0 1 2 3 4 5 6 7 8 9

0 1 2 3 4 5 6 7 8 9

1	2	3	4	5	6	7	8	9

1	2	3	4	5	6	7	8	9

1	2	3	4	5	6	7	8	9

1	2	3	4	5	6	7	8	9

Post-partum 2

The following questions are about your eating habits since you DELIVERED your baby.

7. How often do you eat the skin on chicken?  Seldom/Never  Sometimes  Often/Always

How often do you eat the fat on meat?  Seldom/Never  Sometimes  Often/Always

How often do you add salt to your food?  Seldom/Never  Sometimes  Often/Always

How often do you add pepper to your food?  Seldom/Never  Sometimes  Often/Always

8. Not counting salad or potatoes, about how many servings of vegetables do you eat per day or per week?

VEGETABLES

none 1 2 3 4 5 6 7 8 9 per DAY or WEEK

9. Not counting juices, about how many pieces of fruit do you eat per day or per week?

FRUITS

none 1 2 3 4 5 6 7 8 9 per DAY or WEEK

10. Since you DELIVERED your baby, have you taken any vitamins or minerals?

NO

YES, fairly regularly  YES, but not regularly If YES:

If YES, please indicate the type and number of pills per Day or Week.

	none	1	2	3	4	5	6	7	8+	Day	Week
Multiple Vitamin Pills	<input type="radio"/>										
Other Vitamin/Mineral Pills	<input type="radio"/>										
Vitamin A	<input type="radio"/>										
Vitamin C	<input type="radio"/>										
Vitamin E	<input type="radio"/>										
Calcium or dolomite	<input type="radio"/>										
Iron	<input type="radio"/>										
Folate (B6)	<input type="radio"/>										

For the Other Vitamins, please indicate below how many milligrams or IUs per pill you take.

Vitamin A \_\_\_\_\_ IU per pill

Vitamin C \_\_\_\_\_ mg per pill

Vitamin E \_\_\_\_\_ IU per pill

Calcium or dolomite \_\_\_\_\_ mg per pill

Iron \_\_\_\_\_ mg per pill

Folate (B6) \_\_\_\_\_ mg per pill

Other Supplements (please fill in all that apply)

Yeast  
 Selenium

Zinc  
 Beta-Carotene

Cod Liver Oil  
Other: \_\_\_\_\_

Please list the brand and type of multiple vitamin/mineral you usually take: \_\_\_\_\_

Please take a moment to fill in any questions you may have skipped. Thank you for taking the time to fill out this information.

PLEASE DO NOT WRITE IN THIS BOX

0	1	2	3	4	5	6	7	8	9
<input type="checkbox"/>									
<input type="checkbox"/>									
<input type="checkbox"/>									
<input type="checkbox"/>									

other

0	1	2	3	4	5	6	7	8	9
<input type="checkbox"/>									
<input type="checkbox"/>									
<input type="checkbox"/>									
<input type="checkbox"/>									

vitamins

Subject Number

0	1	2	3	4	5	6	7	8	9
<input type="checkbox"/>									
<input type="checkbox"/>									
<input type="checkbox"/>									
<input type="checkbox"/>									

A

C

E

Ca

## Post Partum Soldiers and Family Members

Subject Number: \_\_\_\_\_

Date: \_\_\_\_\_

This questionnaire is similar to the one you answered last time. It will ask you some questions about diet, activity level and health habits. It will take about 20 - 30 minutes. If you have any questions about this survey, please ask for help from the person who gave this survey to you. Please use a number two pencil to fill in the ovals. Thank you.

**EXERCISE IN WHICH YOU PARTICIPATED  
DURING THE LAST THREE MONTHS**

1. A few activities are listed below for the last THREE MONTHS since you filled out the previous questionnaire. Please fill in an oval under YES or NO for each activity for EACH MONTH. Then go back and indicate the average number of days per week and the minutes per day you did the YES activities for EACH MONTH.

NO	YES	3 MONTHS AGO	AVERAGE DAYS PER WEEK							MINUTES PER DAY
			1	2	3	4	5	6	7	
<input type="radio"/>	<input checked="" type="radio"/>	Walking	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	_____
<input type="radio"/>	<input checked="" type="radio"/>	Jog/Run	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	_____
<input type="radio"/>	<input checked="" type="radio"/>	Strength training (free weights, nautilus, etc.)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	_____
<input type="radio"/>	<input checked="" type="radio"/>	Stretching (flexibility) exercises	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	_____
		Other exercise or sports (list up to 2):	<input type="radio"/>							_____
<input type="radio"/>	<input checked="" type="radio"/>	88	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	_____
2 MONTHS AGO			AVERAGE DAYS PER WEEK							MINUTES PER DAY
<input type="radio"/>	<input checked="" type="radio"/>	Walking	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	_____
<input type="radio"/>	<input checked="" type="radio"/>	Jog/Run	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	_____
<input type="radio"/>	<input checked="" type="radio"/>	Strength training (free weights, nautilus, etc.)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	_____
<input type="radio"/>	<input checked="" type="radio"/>	Stretching (flexibility) exercises	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	_____
		Other exercise or sports (list up to 2):	<input type="radio"/>							_____
<input type="radio"/>	<input checked="" type="radio"/>	88	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	_____
LAST MONTH			AVERAGE DAYS PER WEEK							MINUTES PER DAY
<input type="radio"/>	<input checked="" type="radio"/>	Walking	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	_____
<input type="radio"/>	<input checked="" type="radio"/>	Jog/Run	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	_____
<input type="radio"/>	<input checked="" type="radio"/>	Strength training (free weights, nautilus, etc.)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	_____
<input type="radio"/>	<input checked="" type="radio"/>	Stretching (flexibility) exercises	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	_____
		Other exercise or sports (list up to 2):	<input type="radio"/>							_____
<input type="radio"/>	<input checked="" type="radio"/>	88	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	_____

PLEASE DO NOT WRITE IN THIS BOX

subject  
number

0	1	2	3	4	5	6	7	8	9
---	---	---	---	---	---	---	---	---	---

0	1	2	3	4	5	6	7	8	9
day									

0	1	2	3	4	5	6	7	8	9
month									

Post-partum 3

2. Are you currently using birth control?  NO  YES

If YES, what method or type are you using? \_\_\_\_\_

3. What percentage of your baby's feedings are breast milk?

- No breast milk
- 25% breast milk
- 50% breast milk
- 75% breast milk
- 100% breast milk

4. How many weeks after birth did your baby begin eating food or formula other than breast milk?

\_\_\_\_\_ Number of weeks after birth

								4 a	
0	1	2	3	4	5	6	7	8	9

5. Have you donated blood in the last six months?

NO  YES

If YES, How many months ago was it?

- 1
- 2
- 3
- 4
- 5
- 6

6. How many months after you delivered your baby did your menstrual period begin? Please indicate 0 if you have not yet menstruated.)

- 0
- 1
- 2
- 3
- 4
- 5
- 6

7. What day and month did your last period start? (Please indicate 0 if you have not menstruated since delivering your baby.)

\_\_\_\_\_ / \_\_\_\_\_ day/month

								2 a	
0	1	2	3	4	5	6	7	8	9
								day	
0	1	2	3	4	5	6	7	8	9
								month	
0	1	2	3	4	5	6	7	8	9
								days	

8. For each month since you delivered your baby, please indicate the number of times you started a menstrual period. Please fill in one oval for each month.

- |         |                         |                         |                         |
|---------|-------------------------|-------------------------|-------------------------|
| Month 1 | <input type="radio"/> 0 | <input type="radio"/> 1 | <input type="radio"/> 2 |
| Month 2 | <input type="radio"/> 0 | <input type="radio"/> 1 | <input type="radio"/> 2 |
| Month 3 | <input type="radio"/> 0 | <input type="radio"/> 1 | <input type="radio"/> 2 |
| Month 4 | <input type="radio"/> 0 | <input type="radio"/> 1 | <input type="radio"/> 2 |
| Month 5 | <input type="radio"/> 0 | <input type="radio"/> 1 | <input type="radio"/> 2 |
| Month 6 | <input type="radio"/> 0 | <input type="radio"/> 1 | <input type="radio"/> 2 |

9. How many days were between the start of your last two periods? (Put a 0 if you have not menstruated since delivering your baby.) \_\_\_\_\_ days

## DIET HISTORY AND HEALTH HABITS

10. Are you on a special diet? Please fill in no more than two ovals.

No  
 Weight Loss  
 Weight Gain

Low Fat  
 Vegetarian  
 High Protein

High Carbohydrate  
 Low Cholesterol  
 Low Salt

11. The following section is about your eating habits for the last SIX MONTHS. Thinking back over the past six months, indicate how often you ate the foods listed on the next 4 pages.

First, indicate whether your serving size was small, medium or large. (A small portion is about one-half the medium serving size shown, or less; a large portion is about one-and-a-half times as much, or more.)

Then, fill in an oval for the number of times you ate each item and fill an oval for the time period. For example, you may have eaten bananas twice a week (fill in a bubble under "2" and an oval under "week"). If you did not eat the food, fill in the oval under "none". Please DO NOT SKIP foods. Please BE CAREFUL which oval you fill in. It will make a big difference if you say "Hamburger once a day" when you mean "Hamburger once a week"!

Please look at the example below. This person:

- 1) ate a medium serving of cantaloupe once a week
- 2) had 1/2 a grapefruit about twice during the month
- 3) had a large hamburger or cheeseburger or meat loaf about four times a week
- 4) did not eat winter squash.

	MEDIUM SERVING	YOUR SERVING	NUMBER OF TIMES:							PER:			
		S M L	none	1	2	3	4	5	6	7	day	week	month
Cantaloupe (in season)	1/4 medium	<input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>										
Grapefruit	(1/2)	<input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>										
Hamburger, Cheesburger,	1/2 cup	<input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>										
Meat Loaf	1 medium	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Winter Squash, Baked Squash	1/2 cup	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Since the number of times is limited to 7, you may have to rethink your answer. For example, if you feel that you ate apples 8 times last month, it is the same as 2 times a week or 14 times a week is the same as 2 a day.

If you ate something MORE THAN 7 TIMES A DAY, please write in the food item on an available blank line at the bottom of the section and fill in an oval for the number of times a DAY you ate the item.

	MEDIUM SERVING	YOUR SERVING	NUMBER OF TIMES:							PER:			
		S M L	none	1	2	3	4	5	6	7	day	week	month
FRUITS, VEGETABLES													
Apples, applesauce, pears	(1) or 1/2 cup												
Cantaloupe (in season)	1/4 medium												
Oranges	1 medium												
Orange juice or grapefruit juice	6oz. glass												
Grapefruit	(1/2)												
Other fruit juices, fortified fruit drinks	6oz. glass												
Beans such as, baked beans, pintos, kidney, limas or in Chili	3/4 cup												
Tomatoes, tomato juice	(1) or 6oz.												
Broccoli	1/2 cup												
Spinach	1/2 cup												
Mustard greens, turnip greens, collards	1/2 cup												
Cole slaw, cabbage, sauerkraut	1/2 cup												
Carrots or mixed vegetables containing carrots	1/2 cup												
Green salad	1 med. bowl												
Salad dressing, mayonnaise (including on sandwiches)	2 Tablespoon												
French fries and fried potatoes	3/4 cup												
Sweet potatoes, yams	1/2 cup												
Other potatoes, incl. boiled, baked, potato salad, mashed	(1) or 1/2 cup												
Rice	3/4 cup												
FRUITS, VEGETABLES EATEN MORE THAN SEVEN TIMES A DAY		S M L	NUMBER OF TIMES PER DAY:										
1			8	9	10	11	12	13	14	15	16	17	18
2													
3													
4													

PLEASE DO NOT WRITE IN THIS BOX

0	1	2	3	4	5	6	7	8	9
1									
2									

0	1	2	3	4	5	6	7	8	9
1									
2									

0	1	2	3	4	5	6	7	8	9
1									
2									

0	1	2	3	4	5	6	7	8	9
1									
2									

Post-partum 3

	MEDIUM SERVING	YOUR SERVING	NUMBER OF TIMES:							PER:				
		S M L	none	1	2	3	4	5	6	7	day	week	month	
MEAT, LUNCH ITEMS														
Hamburgers, cheeseburgers, meat loaf	1 medium	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
Beef - steaks, roasts	4oz	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
Beef stew or pot pie with carrots, other vegetables	1 cup	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
Liver, including chicken livers	4oz	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
Pork, including chops, roasts	4oz (2 chops)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
Fried chicken	2sm/1lg piece	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
Chicken or turkey, roasted, stewed or broiled	2sm/1lg piece	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
Fried fish or fish sandwich	4oz or 1 sand	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
Other fish, broiled, baked	4oz	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
Spaghetti, lasagna, other pasta with tomato sauce	1 cup	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
Hot dogs	2 dogs	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
Ham, lunch meats	2 slices	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
Vegetable soup, vegetable beef, minestrone, tomato soup	1 med. bowl	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
MEAT, LUNCH ITEMS EATEN MORE THAN SEVEN TIMES A DAY		S M L	NUMBER OF TIMES PER DAY:											
1		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
2		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
BREAKFAST FOODS		S M L	8	9	10	11	12	13	14	15	16	17	18	19
High fiber, bran or granola cereals, shredded wheat	1 med. bowl	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
Highly fortified cereals, such as Product 19, Total or Most	1 med. bowl	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
Other cold cereals, such as Corn Flakes, Rice Krispies	1 med. bowl	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
Cooked cereals	1 med. bowl	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
Eggs (1 egg = small serv)	2 eggs	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
Bacon	2 slices	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
Sausage	2 patties/links	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
BREAKFAST FOODS EATEN MORE THAN SEVEN TIMES A DAY		S M L	8	9	10	11	12	13	14	15	16	17	18	19
3		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
4		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	

PLEASE DO NOT WRITE IN THIS BOX

0 1 2 3 4 5 6 7 8 9

0 1 2 3 4 5 6 7 8 9

0 1 2 3 4 5 6 7 8 9

0 1 2 3 4 5 6 7 8 9

1  
2

2

3

4

**Post-partum 3**

	MEDIUM SERVING	YOUR SERVING	NUMBER OF TIMES:							PER:							
<b>BREADS, SALTY SNACKS, SPREADS</b>			S	M	L	none	1	2	3	4	5	6	7	day	week	month	
White bread (including sandwiches), bagels, etc., crackers	2 slices, 3 crackers		<input type="radio"/>														
Dark bread, including whole wheat, rye, pumpernickel	2 slices		<input type="radio"/>														
Corn bread, corn muffins, corn tortillas	1 med. piece		<input type="radio"/>														
Salty snacks (chips, popcorn, etc.)	2 handfuls		<input type="radio"/>														
Peanuts, peanut butter	2 Tablespoon		<input type="radio"/>														
Margarine on bread or rolls	2 pats		<input type="radio"/>														
Butter on bread or rolls	2 pats		<input type="radio"/>														
<b>BREADS, ETC. EATEN MORE THAN SEVEN TIMES A DAY</b>			S	M	L	8	9	10	11	12	13	14	15	16	17	18	19
1			<input type="radio"/>														
2			<input type="radio"/>														
3			<input type="radio"/>														
4			<input type="radio"/>														
<b>SWEETS</b>			S	M	L	none	1	2	3	4	5	6	7	day	week	month	
Ice cream	1 scoop		<input type="radio"/>														
Doughnuts, cookies, cakes, pastry	1pc or 3 cook		<input type="radio"/>														
Pies	1 med. slice		<input type="radio"/>														
Chocolate candy	sm bar / 1oz		<input type="radio"/>														
<b>SWEETS EATEN MORE THAN SEVEN TIMES A DAY</b>			S	M	L	8	9	10	11	12	13	14	15	16	17	18	19
5			<input type="radio"/>														
6			<input type="radio"/>														

0 1 2 3 4 5 6 7 8 9  
           
           
0 1 2 3 4 5 6 7 8 9

0 1 2 3 4 5 6 7 8 9  
           
           
0 1 2 3 4 5 6 7 8 9

PLEASE DO NOT WRITE IN THIS BOX

0 1 2 3 4 5 6 7 8 9  
           
           
0 1 2 3 4 5 6 7 8 9

0 1 2 3 4 5 6 7 8 9  
           
           
0 1 2 3 4 5 6 7 8 9

0 1 2 3 4 5 6 7 8 9  
           
           
0 1 2 3 4 5 6 7 8 9

0 1 2 3 4 5 6 7 8 9  
           
           
0 1 2 3 4 5 6 7 8 9

	MEDIUM SERVING	YOUR SERVING	NUMBER OF TIMES:							PER:			
DAIRY PRODUCTS, BEVERAGES		S M L	none	1	2	3	4	5	6	7	day	week	month
Cheeses and cheese spreads, not including cottage cheese	2 slices or 2oz	<input type="radio"/> <input type="radio"/> <input type="radio"/>											
Whole milk and beverages with whole milk (not incl. on cereal)	8oz glass	<input type="radio"/> <input type="radio"/> <input type="radio"/>											
2% milk and beverages with 2% milk (not including on cereal)	8oz glass	<input type="radio"/> <input type="radio"/> <input type="radio"/>											
Skim milk, 1% milk or buttermilk (not including on cereal)	8oz glass	<input type="radio"/> <input type="radio"/> <input type="radio"/>											
Regular soft drinks (not diet)	12oz can	<input type="radio"/> <input type="radio"/> <input type="radio"/>											
Beer	12oz can	<input type="radio"/> <input type="radio"/> <input type="radio"/>											
Wine	1 med. glass	<input type="radio"/> <input type="radio"/> <input type="radio"/>											
Liquor	1 shot	<input type="radio"/> <input type="radio"/> <input type="radio"/>											
Milk or cream in coffee or tea	1 Tablespoon	<input type="radio"/> <input type="radio"/> <input type="radio"/>											
Sugar in coffee or tea, or on cereal	2 teaspoon	<input type="radio"/> <input type="radio"/> <input type="radio"/>											
DAIRY, BEVERAGES EATEN MORE THAN SEVEN TIMES A DAY		S M L	NUMBER OF TIMES PER DAY:										
1		<input type="radio"/> <input type="radio"/> <input type="radio"/>											
2		<input type="radio"/> <input type="radio"/> <input type="radio"/>											
3		<input type="radio"/> <input type="radio"/> <input type="radio"/>											
4		<input type="radio"/> <input type="radio"/> <input type="radio"/>											

PLEASE DO NOT WRITE IN THIS BOX

0 1 2 3 4 5 6 7 8 9

0 1 2 3 4 5 6 7 8 9

0 1 2 3 4 5 6 7 8 9

0 1 2 3 4 5 6 7 8 9

1	<input type="checkbox"/>												
2	<input type="checkbox"/>												
3	<input type="checkbox"/>												
4	<input type="checkbox"/>												

1	<input type="checkbox"/>												
2	<input type="checkbox"/>												
3	<input type="checkbox"/>												
4	<input type="checkbox"/>												

1	<input type="checkbox"/>												
2	<input type="checkbox"/>												
3	<input type="checkbox"/>												
4	<input type="checkbox"/>												

1	<input type="checkbox"/>												
2	<input type="checkbox"/>												
3	<input type="checkbox"/>												
4	<input type="checkbox"/>												

The following questions are about your eating habits for the last SIX MONTHS.

12. How often do you eat the skin on chicken  Seldom/Never  Sometimes  Often/Always

How often do you eat the fat on meat?  Seldom/Never  Sometimes  Often/Always

How often do you add salt to your food?  Seldom/Never  Sometimes  Often/Always

How often do you add pepper to your food?  Seldom/Never  Sometimes  Often/Always

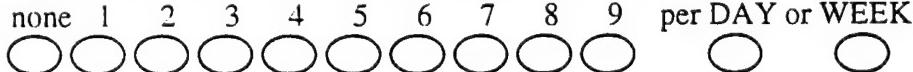
13. Not counting salad or potatoes, about how many servings of vegetables do you eat per day or per week?

VEGETABLES      none    1    2    3    4    5    6    7    8    9    per DAY or WEEK



14. Not counting juices, about how many pieces of fruit do you eat per day or per week?

FRUITS      none    1    2    3    4    5    6    7    8    9    per DAY or WEEK



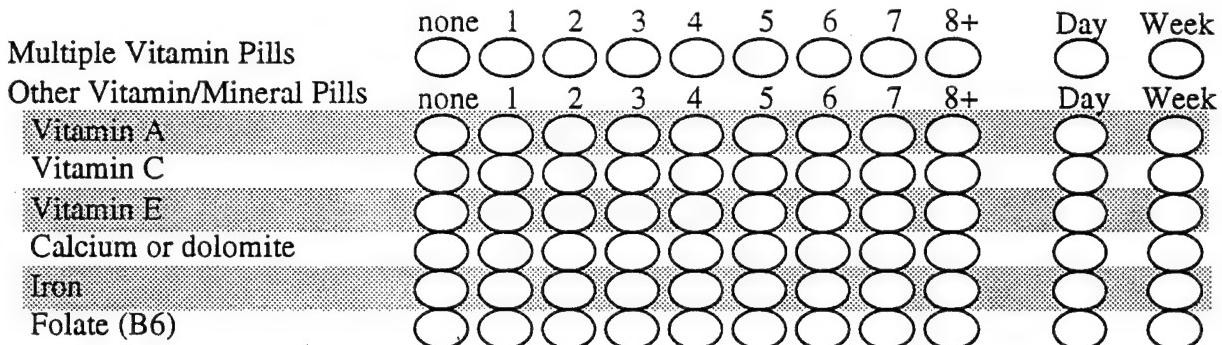
15. Over the last SIX MONTHS, have you taken any vitamins or minerals?

NO

YES, fairly regularly

YES, but not regularly If YES:

If YES, please indicate the type and number of pills per Day or Week.



For the Other Vitamins, please indicate below how many milligrams or IU's per pill you take.

Vitamin A \_\_\_\_\_ IU per pill  
 Vitamin C \_\_\_\_\_ mg per pill  
 Vitamin E \_\_\_\_\_ IU per pill  
 Calcium or dolomite \_\_\_\_\_ mg per pill  
 Iron \_\_\_\_\_ mg per pill  
 Folate (B6) \_\_\_\_\_ mg per pill

Other Supplements (please fill in all that apply)

Yeast       Zinc       Cod Liver Oil  
 Selenium       Beta-Carotene       Other: \_\_\_\_\_

Please list the brand and type of multiple vitamin/mineral you usually take: \_\_\_\_\_

Please take a moment to fill in any questions you may have skipped. Thank you for taking the time to fill out this information.

PLEASE DO NOT WRITE IN THIS BOX

0 1 2 3 4 5 6 7 8 9


other

0 1 2 3 4 5 6 7 8 9


vitamins

Subject Number


A

0 1 2 3 4 5 6 7 8 9


C


E


Ca

**Non-pregnant Soldiers**

Subject Number: \_\_\_\_\_

Date: \_\_\_\_\_

This questionnaire asks you some questions about your background, diet, activity level, and health habits. Your answers will help us determine the effect of pregnancy on performance, health and nutrition in women. This survey looks longer than it really is. It should only take you 30-45 minutes to complete. If you have any questions about this survey, please ask for help from the person who gave this survey to you. Please use a number 2 pencil to fill in the ovals. Thank you.

**BACKGROUND**PLEASE USE  
A #2 PENCIL

1. What is your age? \_\_\_\_\_ years

2. What is your current rank?

	1	2	3	4	5	6	7	8	9
E	<input type="radio"/>								
O	<input type="radio"/>								
WO	<input type="radio"/>								

3. What is your current MOS? \_\_\_\_\_

4. Which ethnic group do you belong to?

- American Indian/Alaskan Native/Eskimo
- Asian/Pacific Islander
- Black/African
- Hispanic
- White/Caucasian, not of Hispanic origin
- Other: \_\_\_\_\_

0	1	2	3	4	5	6	7	8	9

day	1	2	3	4	5	6	7	8	9
month									

PLEASE DO NOT WRITE IN THIS BOX

0	1	2	3	4	5	6	7	8	9

0	1	2	3	4	5	6	7	8	9

age

MOS

5. What is the highest level of education you have completed?

- Some high school
- High school graduate
- Some college
- College graduate
- Post-graduate study
- Post-graduate degree

6. What is your current marital status?

- Married and currently living with spouse
- Married, but unaccompanied
- Legally separated/Divorced
- Single, not married

### SMOKING HISTORY

7. Did you smoke 1 or more cigarettes in the last MONTH?

- NO
- YES

a. Usually, how many days a week do you smoke? <1    1    2    3    4    5    6    7 days

If YES: b. On those days, about how many cigarettes do you smoke per day? \_\_\_\_\_

...or How many years have you been smoking cigarettes? \_\_\_\_\_ years

8. Did you quit smoking within the last year?

- No, I never smoked
- No, I continue to smoke
- Yes, I quit smoking more than 1 year ago
- Yes, I quit smoking within the last year

a. How long ago did you quit smoking cigarettes?

- 6 months ago or less (\_\_\_\_\_ months)
- Greater than 6 months ago (\_\_\_\_\_ months)

If YES: b. How many days a week did you smoke? <1    1    2    3    4    5    6    7 days

c. On those days, about how many cigarettes did you smoke per day? \_\_\_\_\_

d. How many years did you smoke cigarettes before you quit? \_\_\_\_\_ years

7c  
years

0	1	2	3	4	5	6	7	8	9

0	1	2	3	4	5	6	7	8	9

0	1	2	3	4	5	6	7	8	9

7b cigs per day

0	1	2	3	4	5	6	7	8	9

quit months

0	1	2	3	4	5	6	7	8	9

8c cigs per day

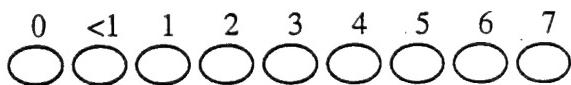
0	1	2	3	4	5	6	7	8	9

8d years

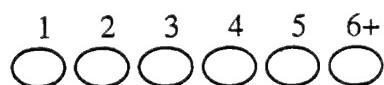
## ALCOHOL USE

9. Please indicate the average number of days per week you have AT LEAST ONE alcoholic drink (beer, wine, liquor) and indicate the average number of drinks you drank on those days.

Average number of days per week you have at least one alcoholic drink



Average number of drinks you drink on those days



## PRIOR PREGNANCIES

10. Please fill in an oval under the appropriate number for each item listed below, as they apply to you.

Pregnancies, including this one



Prior live births



Miscarriages



Living children



Multiple birth pregnancies (twins, triplets, etc.)



PLEASE DO NOT WRITE IN THIS BOX

0 1 2 3 4 5 6 7 8 9

--	--	--	--	--	--	--	--	--	--

11 years

## EXERCISE IN WHICH YOU PARTICIPATE

11. A few physical activities are listed below. Read the list and fill in the oval under YES in front of any activities you do. Fill in the oval under NO in front of any activity you do not do. Next, go back to the activities where you filled in the oval under YES and fill in the ovals for the average number of days per week you did the activity and write in the number of minutes per day.

NO	YES	DAYS PER WEEK							MINUTES PER DAY
		1	2	3	4	5	6	7	
<input type="checkbox"/>	<input type="checkbox"/>	Walking							
<input type="checkbox"/>	<input type="checkbox"/>	Jog/Run							
<input type="checkbox"/>	<input type="checkbox"/>	Strength training (free weights, nautilus, etc.)							
<input type="checkbox"/>	<input type="checkbox"/>	Stretching (flexibility) exercises							
Other exercise or sports (list up to 2):		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

12. Are you currently using birth control?  NO  YES

If YES, what method or type are you using? \_\_\_\_\_

13. Have you donated blood in the last six months?

NO  YES

If YES, how many months ago was it?  1  2  3  4  5  6

14. What day and month did your last period start? \_\_\_\_\_ / \_\_\_\_\_ day/month

PLEASE DO NOT WRITE IN THIS BOX

12 a

0	1	2	3	4	5	6	7	8	9
<input type="text"/>									
<input type="text"/>									

0	1	2	3	4	5	6	7	8	9
<input type="text"/>									
<input type="text"/>									

day

0	1	2	3	4	5	6	7	8	9
<input type="text"/>									
<input type="text"/>									

month

## DIET HISTORY AND HEALTH HABITS

15. Are you on a special diet? Please fill in no more than two ovals.

No  
 Weight Loss  
 Weight Gain

Low Fat  
 Vegetarian  
 High Protein

High Carbohydrate  
 Low Cholesterol  
 Low Salt

16. The following section is about your usual eating habits. Thinking back over the past month, indicate how often you ate the foods listed on the next 4 pages.

First, indicate whether your serving size was small, medium or large. (A small portion is about one-half the medium serving size shown, or less; a large portion is about one-and-a-half times as much, or more.)

Then, fill in an oval for the number of times you ate each item and fill an oval for the time period. For example, you may have eaten bananas twice a week (fill in a bubble under "2" and an oval under "week"). If you did not eat the food, fill in the oval under "none". Please DO NOT SKIP foods. Please BE CAREFUL which oval you fill in. It will make a big difference if you say "Hamburger once a day" when you mean "Hamburger once a week"!

Please look at the example below. This person:

- 1) ate a medium serving of cantaloupe once a week
- 2) had 1/2 a grapefruit about twice during the month
- 3) had a large hamburger or cheeseburger or meat loaf about four times a week
- 4) did not eat winter squash.

	MEDIUM SERVING	YOUR SERVING	NUMBER OF TIMES:								PER:					
			S	M	L	none	1	2	3	4	5	6	7	day	week	month
Cantaloupe (in season)	1/4 medium		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Grapefruit	(1/2)		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Hamburger, Cheesburger,	1/2 cup		<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Meat Loaf	1 medium		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Winter Squash, Baked Squash	1/2 cup		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>								

Since the number of times is limited to 7, you may have to rethink your answer. For example, if you feel that you ate apples 8 times last month, it is the same as 2 times a week or 14 times a week is the same as 2 a day.

If you ate something MORE THAN 7 TIMES A DAY, please write in the food item on an available blank line at the bottom of the section and fill in an oval for the number of times a DAY you ate the item.

	MEDIUM SERVING	YOUR SERVING	NUMBER OF TIMES:								PER:		
		S M L	none	1	2	3	4	5	6	7	day	week	month
FRUITS, VEGETABLES													
Apples, applesauce, pears	(1) or 1/2 cup												
Cantaloupe (in season)	1/4 medium												
Oranges	1 medium												
Orange juice or grapefruit juice	6oz. glass												
Grapefruit	(1/2)												
Other fruit juices, fortified fruit drinks	6oz. glass												
Beans such as, baked beans, pintos, kidney, limas or in Chili	3/4 cup												
Tomatoes, tomato juice	(1) or 6oz												
Broccoli	1/2 cup												
Spinach	1/2 cup												
Mustard greens, turnip greens, collards	1/2 cup												
Cole slaw, cabbage, sauerkraut	1/2 cup												
Carrots or mixed vegetables containing carrots	1/2 cup												
Green salad	1 med. bowl												
Salad dressing, mayonnaise (including on sandwiches)	2 Tablespoon												
French fries and fried potatoes	3/4 cup												
Sweet potatoes, yams	1/2 cup												
Other potatoes, incl. boiled, baked, potato salad, mashed	(1) or 1/2 cup												
Rice	3/4 cup												

FRUITS, VEGETABLES EATEN MORE THAN SEVEN TIMES A DAY

	S	M	L	8	9	10	11	12	13	14	15	16	17	18	19
1															
2															
3															
4															

PLEASE DO NOT WRITE IN THIS BOX

0	1	2	3	4	5	6	7	8	9
1	2	3	4	5	6	7	8	9	0
1	2	3	4	5	6	7	8	9	0
1	2	3	4	5	6	7	8	9	0

0	1	2	3	4	5	6	7	8	9
2	3	4	5	6	7	8	9	0	1
2	3	4	5	6	7	8	9	0	1
2	3	4	5	6	7	8	9	0	1

0	1	2	3	4	5	6	7	8	9
3	4	5	6	7	8	9	0	1	2
3	4	5	6	7	8	9	0	1	2
3	4	5	6	7	8	9	0	1	2

0	1	2	3	4	5	6	7	8	9
4	5	6	7	8	9	0	1	2	3
4	5	6	7	8	9	0	1	2	3
4	5	6	7	8	9	0	1	2	3

	MEDIUM SERVING	YOUR SERVING	NUMBER OF TIMES:							PER:			
		S M L	none	1	2	3	4	5	6	7	day	week	month
MEAT, LUNCH ITEMS													
Hamburgers, cheeseburgers, meat loaf	1 medium	<input type="radio"/> <input type="radio"/> <input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Beef - steaks, roasts	4oz	<input type="radio"/> <input type="radio"/> <input type="radio"/>											
Beef stew or pot pie with carrots, other vegetables	1 cup	<input type="radio"/> <input type="radio"/> <input type="radio"/>											
Liver, including chicken livers	4oz	<input type="radio"/> <input type="radio"/> <input type="radio"/>											
Pork, including chops, roasts	4oz (2 chops)	<input type="radio"/> <input type="radio"/> <input type="radio"/>											
Fried chicken	2sm/11g piece	<input type="radio"/> <input type="radio"/> <input type="radio"/>											
Chicken or turkey, roasted, stewed or broiled	2sm/11g piece	<input type="radio"/> <input type="radio"/> <input type="radio"/>											
Fried fish or fish sandwich	4oz or 1 sand	<input type="radio"/> <input type="radio"/> <input type="radio"/>											
Other fish, broiled, baked	4oz	<input type="radio"/> <input type="radio"/> <input type="radio"/>											
Spaghetti, lasagna, other pasta with tomato sauce	1 cup	<input type="radio"/> <input type="radio"/> <input type="radio"/>											
Hot dogs	2 dogs	<input type="radio"/> <input type="radio"/> <input type="radio"/>											
Ham, lunch meats	2 slices	<input type="radio"/> <input type="radio"/> <input type="radio"/>											
Vegetable soup, vegetable beef, minestrone, tomato soup	1 med. bowl	<input type="radio"/> <input type="radio"/> <input type="radio"/>											
MEAT, LUNCH ITEMS EATEN MORE THAN SEVEN TIMES A DAY		S M L	NUMBER OF TIMES PER DAY:										
1		<input type="radio"/> <input type="radio"/> <input type="radio"/>											
2		<input type="radio"/> <input type="radio"/> <input type="radio"/>											
BREAKFAST FOODS		S M L											
High fiber, bran or granola cereals, shredded wheat	1 med. bowl	<input type="radio"/> <input type="radio"/> <input type="radio"/>											
Highly fortified cereals, such as Product 19, Total or Most	1 med. bowl	<input type="radio"/> <input type="radio"/> <input type="radio"/>											
Other cold cereals, such as Corn Flakes, Rice Krispies	1 med. bowl	<input type="radio"/> <input type="radio"/> <input type="radio"/>											
Cooked cereals	1 med. bowl	<input type="radio"/> <input type="radio"/> <input type="radio"/>											
Eggs (1 egg = small serv)	2 eggs	<input type="radio"/> <input type="radio"/> <input type="radio"/>											
Bacon	2 slices	<input type="radio"/> <input type="radio"/> <input type="radio"/>											
Sausage	2 patties/links	<input type="radio"/> <input type="radio"/> <input type="radio"/>											
BREAKFAST FOODS EATEN MORE THAN SEVEN TIMES A DAY		S M L											
3		<input type="radio"/> <input type="radio"/> <input type="radio"/>											
4		<input type="radio"/> <input type="radio"/> <input type="radio"/>											

PLEASE DO NOT WRITE IN THIS BOX

0	1	2	3	4	5	6	7	8	9
1	2	3	4	5	6	7	8	9	0

0	1	2	3	4	5	6	7	8	9
2	3	4	5	6	7	8	9	0	1

0	1	2	3	4	5	6	7	8	9
3	4	5	6	7	8	9	0	1	2

0	1	2	3	4	5	6	7	8	9
4	5	6	7	8	9	0	1	2	3

	MEDIUM SERVING	YOUR SERVING	NUMBER OF TIMES:							PER:			
BREADS, SALTY SNACKS, SPREADS		S M L	none	1	2	3	4	5	6	7	day	week	month
White bread (including sandwiches), bagels, etc., crackers	2 slices, 3 crackers	<input type="radio"/> <input type="radio"/> <input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Dark bread, including whole wheat, rye, pumpernickel	2 slices	<input type="radio"/> <input type="radio"/> <input type="radio"/>											
Corn bread, corn muffins, corn tortillas	1 med. piece	<input type="radio"/> <input type="radio"/> <input type="radio"/>											
Salty snacks (chips, popcorn, etc.)	2 handfuls	<input type="radio"/> <input type="radio"/> <input type="radio"/>											
Peanuts, peanut butter	2 Tablespoon	<input type="radio"/> <input type="radio"/> <input type="radio"/>											
Magarine on bread or rolls	2 pats	<input type="radio"/> <input type="radio"/> <input type="radio"/>											
Butter on bread or rolls	2 pats	<input type="radio"/> <input type="radio"/> <input type="radio"/>											

BREADS, ETC. EATEN MORE THAN SEVEN TIMES A DAY			NUMBER OF TIMES PER DAY:											
	S	M L	8	9	10	11	12	13	14	15	16	17	18	19
1	<input type="radio"/> <input type="radio"/> <input type="radio"/>													
2	<input type="radio"/> <input type="radio"/> <input type="radio"/>													
3	<input type="radio"/> <input type="radio"/> <input type="radio"/>													
4	<input type="radio"/> <input type="radio"/> <input type="radio"/>													

SWEETS			NUMBER OF TIMES PER DAY:											
	S	M L	8	9	10	11	12	13	14	15	16	17	18	19
Ice cream	1 scoop	<input type="radio"/> <input type="radio"/> <input type="radio"/>												
Doughnuts, cookies, cakes, pastry	1pc or 3 cook	<input type="radio"/> <input type="radio"/> <input type="radio"/>												
Pies	1 med. slice	<input type="radio"/> <input type="radio"/> <input type="radio"/>												
Chocolate candy	sm bar / 1 oz	<input type="radio"/> <input type="radio"/> <input type="radio"/>												

SWEETS EATEN MORE THAN SEVEN TIMES A DAY			NUMBER OF TIMES PER DAY:											
	S	M L	8	9	10	11	12	13	14	15	16	17	18	19
5	<input type="radio"/> <input type="radio"/> <input type="radio"/>													
6	<input type="radio"/> <input type="radio"/> <input type="radio"/>													

0 1 2 3 4 5 6 7 8 9	0 1 2 3 4 5 6 7 8 9	0 1 2 3 4 5 6 7 8 9	0 1 2 3 4 5 6 7 8 9
1	2	3	4
5	6	7	8

PLEASE DO NOT WRITE IN THIS BOX

	MEDIUM SERVING	YOUR SERVING	NUMBER OF TIMES:							PER:	
DAIRY PRODUCTS, BEVERAGES		S M L	none	1	2	3	4	5	6	7	day week month
Cheeses and cheese spreads, not including cottage cheese	2 slices or 2oz										
Whole milk and beverages with whole milk (not incl. on cereal)	8oz glass										
2% milk and beverages with 2% milk (not including on cereal)	8oz glass										
Skim milk, 1% milk or buttermilk (not including on cereal)	8oz glass										
Regular soft drinks (not diet)	12oz can										
Beer	12oz can										
Wine	1 med. glass										
Liquor	1 shot										
Milk or cream in coffee or tea	1 Tablespoon										
Sugar in coffee or tea, or on cereal	2 teaspoon										
<b>DAIRY, BEVERAGES EATEN MORE THAN SEVEN TIMES A DAY</b>		S M L	<b>NUMBER OF TIMES PER DAY:</b>								
1			8	9	10	11	12	13	14	15	16
2											17
3											18
4											19

PLEASE DO NOT WRITE IN THIS BOX

0	1	2	3	4	5	6	7	8	9
1									

0	1	2	3	4	5	6	7	8	9
2									

0	1	2	3	4	5	6	7	8	9
3									

0	1	2	3	4	5	6	7	8	9
4									

The following questions are about your usual eating habits.

17. How often do you eat the skin on chicken?  Seldom/Never  Sometimes  Often/Always

How often do you eat the fat on meat?  Seldom/Never  Sometimes  Often/Always

How often do you add salt to your food?  Seldom/Never  Sometimes  Often/Always

How often do you add pepper to your food?  Seldom/Never  Sometimes  Often/Always

18. Not counting salad or potatoes, about how many servings of vegetables do you eat per day or per week?

VEGETABLES

none 1 2 3 4 5 6 7 8 9 per DAY or WEEK

19. Not counting juices, about how many pieces of fruit do you eat per day or per week?

FRUITS

none 1 2 3 4 5 6 7 8 9 per DAY or WEEK

## 20. Do you take any vitamins or minerals?

 NO YES, fairly regularly  YES, but not regularly If YES:

If YES, please indicate the type and number of pills per Day or Week.

	none	1	2	3	4	5	6	7	8+	Day	Week
Multiple Vitamin Pills	<input type="radio"/>										
Other Vitamin/Mineral Pills	<input type="radio"/>										
Vitamin A	<input type="radio"/>										
Vitamin C	<input type="radio"/>										
Vitamin E	<input type="radio"/>										
Calcium or dolomite	<input type="radio"/>										
Iron	<input type="radio"/>										
Folate (B6)	<input type="radio"/>										

For the Other Vitamins, please indicate below how many milligrams or IU's per pill you take.

Vitamin A \_\_\_\_\_ IU per pill

Vitamin C \_\_\_\_\_ mg per pill

Vitamin E \_\_\_\_\_ IU per pill

Calcium or dolomite \_\_\_\_\_ mg per pill

Iron \_\_\_\_\_ mg per pill

Folate (B6) \_\_\_\_\_ mg per pill

Other Supplements (please fill in all that apply)

Yeast       Zinc       Cod Liver Oil  
 Selenium       Beta-Carotene       Other: \_\_\_\_\_

Please list the brand and type of multiple vitamin/mineral you usually take: \_\_\_\_\_

Please take a moment to fill in any questions you may have skipped. Thank you for taking the time to fill out this information.

PLEASE DO NOT WRITE IN THIS BOX

0 1 2 3 4 5 6 7 8 9


other

0 1 2 3 4 5 6 7 8 9


vitamins

Subject Number


A

0 1 2 3 4 5 6 7 8 9


E


Ca

Non-pregnant 2  
Non-pregnant Soldiers

Subject Number: \_\_\_\_\_

Date: \_\_\_\_\_

This questionnaire is similar to the one you answered last time. It will ask you some questions about diet, activity level and health habits. It will take about 20 - 30 minutes. If you have any questions about the survey, please ask for help from the person who gave this survey to you. Please use a number two pencil to fill in the ovals. Thank you.

**PHYSICAL ACTIVITY AND SPORTS**

1. A few physical activities are listed below. Read the list and fill in the oval under YES in front of any activities you did during the last SIX WEEKS. Fill in the oval under NO in front of any activity you did not do. Next, go back to the activities where you filled in the oval under YES and fill in the ovals for the average number of days per week you did the activity and write in the number of minutes per day.

NO	YES	Last Six Weeks	DAYS PER WEEK	MINUTES PER DAY
<input type="radio"/>	<input type="radio"/>	Walking	<input type="radio"/> 1 <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5 <input type="radio"/> 6 <input type="radio"/> 7	_____
<input type="radio"/>	<input type="radio"/>	Jog/Run	<input type="radio"/> 1 <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5 <input type="radio"/> 6 <input type="radio"/> 7	_____
<input type="radio"/>	<input type="radio"/>	Strength training (free weights, nautilus, etc.)	<input type="radio"/> 1 <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5 <input type="radio"/> 6 <input type="radio"/> 7	_____
<input type="radio"/>	<input type="radio"/>	Stretching (flexibility) exercises	<input type="radio"/> 1 <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5 <input type="radio"/> 6 <input type="radio"/> 7	_____
		Other exercise or sports (list up to 2):	<input type="radio"/> 1 <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5 <input type="radio"/> 6 <input type="radio"/> 7	_____
<input type="radio"/> <input type="radio"/>		_____	<input type="radio"/> 1 <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5 <input type="radio"/> 6 <input type="radio"/> 7	_____

2. Are you currently using birth control?  NO  YES

If YES, what method or type are you using? \_\_\_\_\_

3. Have you donated blood in the last six months?

NO  YES

If YES, how many months ago was it?  1    2    3    4    5    6

4. What day and month did your last period start? \_\_\_\_\_ / \_\_\_\_\_ day/month

**PLEASE DO NOT WRITE IN THIS BOX**

subject number

0	1	2	3	4	5	6	7	8	9

2a



0	1	2	3	4	5	6	7	8	9


0	1	2	3	4	5	6	7	8	9

## DIET HISTORY AND HEALTH HABITS

5. Are you on a special diet? Please fill in no more than two ovals.

No  
 Weight Loss  
 Weight Gain

Low Fat  
 Vegetarian  
 High Protein

High Carbohydrate  
 Low Cholesterol  
 Low Salt

6. The following section is about your usual eating habits. Thinking back over the past month, indicate how often you ate the foods listed on the next 4 pages.

First, indicate whether your serving size was small, medium or large. (A small portion is about one-half the medium serving size shown, or less; a large portion is about one-and-a-half times as much, or more.)

Then, fill in an oval for the number of times you ate each item and fill an oval for the time period. For example, you may have eaten bananas twice a week (fill in a bubble under "2" and an oval under "week"). If you did not eat the food, fill in the oval under "none". Please DO NOT SKIP foods. Please BE CAREFUL which oval you fill in. It will make a big difference if you say "Hamburger once a day" when you mean "Hamburger once a week"!

Please look at the example below. This person:

- 1) ate a medium serving of cantaloupe once a week
- 2) had 1/2 a grapefruit about twice during the month
- 3) had a large hamburger or cheeseburger or meat loaf about four times a week
- 4) did not eat winter squash.

	MEDIUM SERVING	YOUR SERVING	NUMBER OF TIMES:							PER:						
			S	M	L	none	1	2	3	4	5	6	7	day	week	month
Cantaloupe (in season)	1/4 medium		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Grapefruit	(1/2)		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Hamburger, Cheeseburger,	1/2 cup		<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Meat Loaf	1 medium		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Winter Squash, Baked Squash	1/2 cup		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>								

Since the number of times is limited to 7, you may have to rethink your answer. For example, if you feel that you ate apples 8 times last month, it is the same as 2 times a week or 14 times a week is the same as 2 a day.

If you ate something MORE THAN 7 TIMES A DAY, please write in the food item on an available blank line at the bottom of the section and fill in an oval for the number of times a DAY you ate the item.

	MEDIUM SERVING	YOUR SERVING	NUMBER OF TIMES:							PER:							
			S	M	L	none	1	2	3	4	5	6	7	day	week	month	
FRUITS, VEGETABLES																	
Apples, applesauce, pears	(1) or 1/2 cup																
Cantaloupe (in season)	1/4 medium																
Oranges	1 medium																
Orange juice or grapefruit juice	6oz glass																
Grapefruit	(1/2)																
Other fruit juices, fortified fruit drinks	6oz glass																
Beans such as, baked beans, pintos, kidney, limas or in Chili	3/4 cup																
Tomatoes, tomato juice	(1) or 6oz																
Broccoli	1/2 cup																
Spinach	1/2 cup																
Mustard greens, turnip greens, collards	1/2 cup																
Cole slaw, cabbage, sauerkraut	1/2 cup																
Carrots or mixed vegetables containing carrots	1/2 cup																
Green salad	1 med. bowl																
Salad dressing, mayonnaise (including on sandwiches)	2 Tablespoon																
French fries and fried potatoes	3/4 cup																
Sweet potatoes, yams	1/2 cup																
Other potatoes, incl. boiled, baked, potato salad, mashed	(1) or 1/2 cup																
Rice	3/4 cup																
FRUITS, VEGETABLES EATEN MORE THAN SEVEN TIMES A DAY			S	M	L	NUMBER OF TIMES PER DAY:											
1						8	9	10	11	12	13	14	15	16	17	18	19
2																	
3																	
4																	

PLEASE DO NOT WRITE IN THIS BOX

0	1	2	3	4	5	6	7	8	9
1									

0	1	2	3	4	5	6	7	8	9
2									

0	1	2	3	4	5	6	7	8	9
3									

0	1	2	3	4	5	6	7	8	9
4									

	MEDIUM SERVING	YOUR SERVING	NUMBER OF TIMES:							PER:			
MEAT, LUNCH ITEMS		S M L	none	1	2	3	4	5	6	7	day	week	month
Hamburgers, cheeseburgers, meat loaf	1 medium												
Beef - steaks, roasts	4oz												
Beef stew or pot pie with carrots, other vegetables	1 cup												
Liver, including chicken livers	4oz												
Pork, including chops, roasts	4oz (2 chops)												
Fried chicken	2sm/1lg piece												
Chicken or turkey, roasted, stewed or broiled	2sm/1lg piece												
Fried fish or fish sandwich	4oz or 1 sand												
Other fish, broiled, baked	4oz												
Spaghetti, lasagna, other pasta with tomato sauce	1 cup												
Hot dogs	2 dogs												
Ham, lunch meats	2 slices												
Vegetable soup, vegetable beef, minestrone, tomato soup	1 med. bowl												

MEAT, LUNCH ITEMS EATEN MORE THAN SEVEN TIMES A DAY	S M L	NUMBER OF TIMES PER DAY:											
1		8	9	10	11	12	13	14	15	16	17	18	19
2													

BREAKFAST FOODS	S M L	NUMBER OF TIMES PER DAY:											
High fiber, bran or granola cereals, shredded wheat		8	9	10	11	12	13	14	15	16	17	18	19
Highly fortified cereals, such as Product 19, Total or Most													
Other cold cereals, such as Corn Flakes, Rice Krispies													
Cooked cereals													
Eggs (1 egg = small serv)	1 med. bowl												
Bacon	2 eggs												
Sausage	2 slices												
	2 patties/links												

BREAKFAST FOODS EATEN MORE THAN SEVEN TIMES A DAY	S M L	NUMBER OF TIMES PER DAY:											
3		8	9	10	11	12	13	14	15	16	17	18	19
4													

PLEASE DO NOT WRITE IN THIS BOX

0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9
1	2	3	4	5	6	7	8	9		2	3	4	5	6	7	8	9		3	4	5	6	7	8	9		4	5	6	7	8	9							

	MEDIUM SERVING	YOUR SERVING	NUMBER OF TIMES:							PER:					
BREADS, SALTY SNACKS, SPREADS			S M L	none	1	2	3	4	5	6	7	day	week	month	
White bread (including sandwiches), bagels, etc., crackers	2 slices, 3 crackers		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
Dark bread, including whole wheat, rye, pumpernickel	2 slices		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
Corn bread, corn muffins, corn tortillas	1 med. piece		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
Salty snacks (chips, popcorn, etc.)	2 handfuls		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
Peanuts, peanut butter	2 Tablespoon		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
Margarine on bread or rolls	2 pats		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
Butter on bread or rolls	2 pats		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
BREADS, ETC. EATEN MORE THAN SEVEN TIMES A DAY			S M L	NUMBER OF TIMES PER DAY:											
1		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
2		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
3		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
4		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
SWEETS			S M L	none	1	2	3	4	5	6	7	day	week	month	
Ice cream	1 scoop		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
Doughnuts, cookies, cakes, pastry	1pc or 3 cook		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
Pies	1 med. slice		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
Chocolate candy	sm bar / 1oz		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
SWEETS EATEN MORE THAN SEVEN TIMES A DAY			S M L	8	9	10	11	12	13	14	15	16	17	18	19
5		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
6		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	

0 1 2 3 4 5 6 7 8 9

0 1 2 3 4 5 6 7 8 9

PLEASE DO NOT WRITE IN THIS BOX

1														
2														

1														
2														

3														
4														

3														
4														

5														
6														

5														
6														

	MEDIUM SERVING	YOUR SERVING	NUMBER OF TIMES:							PER:				
DAIRY PRODUCTS, BEVERAGES		S M L	none	1	2	3	4	5	6	7	day	week	month	
Cheeses and cheese spreads, not including cottage cheese	2 slices or 2oz	<input type="radio"/> <input type="radio"/> <input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
Whole milk and beverages with whole milk (not incl. on cereal)	8oz glass	<input type="radio"/> <input type="radio"/> <input type="radio"/>												
2% milk and beverages with 2% milk (not including on cereal)	8oz glass	<input type="radio"/> <input type="radio"/> <input type="radio"/>												
Skim milk, 1% milk or buttermilk (not including on cereal)	8oz glass	<input type="radio"/> <input type="radio"/> <input type="radio"/>												
Regular soft drinks (not diet)	12oz can	<input type="radio"/> <input type="radio"/> <input type="radio"/>												
Beer	12oz can	<input type="radio"/> <input type="radio"/> <input type="radio"/>												
Wine	1 med. glass	<input type="radio"/> <input type="radio"/> <input type="radio"/>												
Liquor	1 shot	<input type="radio"/> <input type="radio"/> <input type="radio"/>												
Milk or cream in coffee or tea	1 Tablespoon	<input type="radio"/> <input type="radio"/> <input type="radio"/>												
Sugar in coffee or tea, or on cereal	2 teaspoon	<input type="radio"/> <input type="radio"/> <input type="radio"/>												
DAIRY, BEVERAGES EATEN MORE THAN SEVEN TIMES A DAY		S M L	8	9	10	11	12	13	14	15	16	17	18	19
1		<input type="radio"/> <input type="radio"/> <input type="radio"/>												
2		<input type="radio"/> <input type="radio"/> <input type="radio"/>												
3		<input type="radio"/> <input type="radio"/> <input type="radio"/>												
4		<input type="radio"/> <input type="radio"/> <input type="radio"/>												

PLEASE DO NOT WRITE IN THIS BOX

0 1 2 3 4 5 6 7 8 9

0 1 2 3 4 5 6 7 8 9

0 1 2 3 4 5 6 7 8 9

0 1 2 3 4 5 6 7 8 9

1  

--	--	--	--	--	--	--	--	--	--

2  

--	--	--	--	--	--	--	--	--	--

3  

--	--	--	--	--	--	--	--	--	--

4  

--	--	--	--	--	--	--	--	--	--

The following questions are about your eating habits during the last six weeks.

7. How often do you eat the skin on chicken?  Seldom/Never  Sometimes  Often/Always

How often do you eat the fat on meat?  Seldom/Never  Sometimes  Often/Always

How often do you add salt to your food?  Seldom/Never  Sometimes  Often/Always

How often do you add pepper to your food?  Seldom/Never  Sometimes  Often/Always

8. Not counting salad or potatoes, about how many servings of vegetables do you eat per day or per week?

VEGETABLES

none 1 2 3 4 5 6 7 8 9 per DAY or WEEK



9. Not counting juices, about how many pieces of fruit do you eat per day or per week?

FRUITS

none 1 2 3 4 5 6 7 8 9 per DAY or WEEK



10. Have you taken any vitamins or minerals in the last six weeks?

NO

YES, fairly regularly

YES, but not regularly If YES:

If YES, please indicate the type and number of pills per Day or Week.

	none	1	2	3	4	5	6	7	8+	Day	Week
Multiple Vitamin Pills	<input type="radio"/>										
Other Vitamin/Mineral Pills	none	1	2	3	4	5	6	7	8+	Day	Week
Vitamin A	<input type="radio"/>										
Vitamin C	<input type="radio"/>										
Vitamin E	<input type="radio"/>										
Calcium or dolomite	<input type="radio"/>										
Iron	<input type="radio"/>										
Folate (B6)	<input type="radio"/>										

For the Other Vitamins, please indicate below how many milligrams or IU's per pill you take.

Vitamin A \_\_\_\_\_ IU per pill

Vitamin C \_\_\_\_\_ mg per pill

Vitamin E \_\_\_\_\_ IU per pill

Calcium or dolomite \_\_\_\_\_ mg per pill

Iron \_\_\_\_\_ mg per pill

Folate (B6) \_\_\_\_\_ mg per pill

Other Supplements (please fill in all that apply)

Yeast  
 Selenium

Zinc  
 Beta-Carotene

Cod Liver Oil  
 Other: \_\_\_\_\_

Please list the brand and type of multiple vitamin/mineral you usually take: \_\_\_\_\_

Please take a moment to fill in any questions you may have skipped. Thank you for taking the time to fill out this information.

PLEASE DO NOT WRITE IN THIS BOX

0 1 2 3 4 5 6 7 8 9


other

0 1 2 3 4 5 6 7 8 9


vitamins

Subject Number

0 1 2 3 4 5 6 7 8 9


A

0 1 2 3 4 5 6 7 8 9


C

0 1 2 3 4 5 6 7 8 9


E

0 1 2 3 4 5 6 7 8 9


Ca

## **Non-pregnant Soldiers**

Subject Number: \_\_\_\_\_

Date: \_\_\_\_\_

This questionnaire is similar to the one you answered last time. It will ask you some questions about diet, activity level and health habits. It will take about 20 - 30 minutes. If you have any questions about the survey, please ask for help from the person who gave this survey to you. Please use a number two pencil to fill in the ovals. Thank you.

## PHYSICAL ACTIVITY AND SPORTS

1. A few physical activities are listed below. Read the list and fill in the oval under YES in front of any activities you did during the last THREE MONTHS. Fill in the oval under NO in front of any activity you did not do. Next, go back to the activities where you filled in the oval under YES and fill in the ovals for the average number of days per week you did the activity and write in the number of minutes per day.

### AVERAGE DAYS PER WEEK    MINUTES

2. Are you currently using birth control?  NO  YES

If YES, what method or type are you using? \_\_\_\_\_

3. Have you donated blood in the last six months?

NO       YES

If YES, how many months ago was it?

4. What day and month did your last period start? \_\_\_\_\_ / \_\_\_\_\_ day/month

5. During the last six months, how many times did you start your menstrual period? Please fill in one oval for each month.

	0	1	2
Month 1	○	○	○
Month 2	○	○	○
Month 3	○	○	○
Month 4	○	○	○
Month 5	○	○	○
Month 6	○	○	○

6. How many days were between the start of your last two periods? \_\_\_\_\_ days

subject number									
0	1	2	3	4	5	6	7	8	9
								day	
0	1	2	3	4	5	6	7	8	9
								month	
0	1	2	3	4	5	6	7	8	9
								day	
0	1	2	3	4	5	6	7	8	9
								month	
0	1	2	3	4	5	6	7	8	9
days									

## DIET HISTORY AND HEALTH HABITS

7. Are you on a special diet? Please fill in no more than two ovals.

No  
 Weight Loss  
 Weight Gain

Low Fat  
 Vegetarian  
 High Protein

High Carbohydrate  
 Low Cholesterol  
 Low Salt

8. The following section is about your usual eating habits. Thinking back over the past three months, indicate how often you ate the foods listed on the next 4 pages.

First, indicate whether your serving size was small, medium or large. (A small portion is about one-half the medium serving size shown, or less; a large portion is about one-and-a-half times as much, or more.)

Then, fill in an oval for the number of times you ate each item and fill an oval for the time period. For example, you may have eaten bananas twice a week (fill in a bubble under "2" and an oval under "week"). If you did not eat the food, fill in the oval under "none". Please DO NOT SKIP foods. Please BE CAREFUL which oval you fill in. It will make a big difference if you say "Hamburger once a day" when you mean "Hamburger once a week"!

Please look at the example below. This person:

- 1) ate a medium serving of cantaloupe once a week
- 2) had 1/2 a grapefruit about twice during the month
- 3) had a large hamburger or cheeseburger or meat loaf about four times a week
- 4) did not eat winter squash.

	MEDIUM SERVING	YOUR SERVING	NUMBER OF TIMES:							PER:					
			S	M	L	none	1	2	3	4	5	6	7	day	week
Cantaloupe (in season)	1/4 medium (1/2)	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Grapefruit		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Hamburger, Cheeseburger, Meat Loaf	1/2 cup 1 medium	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Winter Squash, Baked Squash	1/2 cup	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>												

Since the number of times is limited to 7, you may have to rethink your answer. For example, if you feel that you ate apples 8 times last month, it is the same as 2 times a week or 14 times a week is the same as 2 a day.

If you ate something MORE THAN 7 TIMES A DAY, please write in the food item on an available blank line at the bottom of the section and fill in an oval for the number of times a DAY you ate the item.

	MEDIUM SERVING	YOUR SERVING	NUMBER OF TIMES:							PER:			
		S M L	none	1	2	3	4	5	6	7	day	week	month
FRUITS, VEGETABLES													
Apples, applesauce, pears	(1) or 1/2 cup												
Cantaloupe (in season)	1/4 medium												
Oranges	1 medium												
Orange juice or grapefruit juice	6oz glass												
Grapefruit	(1/2)												
Other fruit juices, fortified fruit drinks	6oz glass												
Beans such as, baked beans, pintos, kidney, limas or in Chili	3/4 cup												
Tomatoes, tomato juice	(1) or 6oz												
Broccoli	1/2 cup												
Spinach	1/2 cup												
Mustard greens, turnip greens, collards	1/2 cup												
Cole slaw, cabbage, sauerkraut	1/2 cup												
Carrots or mixed vegetables containing carrots	1/2 cup												
Green salad	1 med. bowl												
Salad dressing, mayonnaise (including on sandwiches)	2 Tablespoon												
French fries and fried potatoes	3/4 cup												
Sweet potatoes, yams	1/2 cup												
Other potatoes, incl. boiled, baked, potato salad, mashed	(1) or 1/2 cup												
Rice	3/4 cup												

FRUITS, VEGETABLES EATEN MORE THAN SEVEN TIMES A DAY			NUMBER OF TIMES PER DAY:											
	S	M L	8	9	10	11	12	13	14	15	16	17	18	19
1														
2														
3														
4														

PLEASE DO NOT WRITE IN THIS BOX

0 1 2 3 4 5 6 7 8 9	0 1 2 3 4 5 6 7 8 9	0 1 2 3 4 5 6 7 8 9	0 1 2 3 4 5 6 7 8 9
1	2	3	4

	MEDIUM SERVING	YOUR SERVING	NUMBER OF TIMES:							PER:				
		S M L	none	1	2	3	4	5	6	7	day	week	month	
<b>MEAT, LUNCH ITEMS</b>														
Hamburgers, cheeseburgers, meat loaf	1 medium	S M L	none	1	2	3	4	5	6	7	day	week	month	
Beef - steaks, roasts	4oz	S M L	none	1	2	3	4	5	6	7	day	week	month	
Beef stew or pot pie with carrots, other vegetables	1 cup	S M L	none	1	2	3	4	5	6	7	day	week	month	
Liver, including chicken livers	4oz	S M L	none	1	2	3	4	5	6	7	day	week	month	
Pork, including chops, roasts	4oz (2 chops)	S M L	none	1	2	3	4	5	6	7	day	week	month	
Fried chicken	2sm/1lg piece	S M L	none	1	2	3	4	5	6	7	day	week	month	
Chicken or turkey, roasted, stewed or broiled	2sm/1lg piece	S M L	none	1	2	3	4	5	6	7	day	week	month	
Fried fish or fish sandwich	4oz or 1 sand	S M L	none	1	2	3	4	5	6	7	day	week	month	
Other fish, broiled, baked	4oz	S M L	none	1	2	3	4	5	6	7	day	week	month	
Spaghetti, lasagna, other pasta with tomato sauce	1 cup	S M L	none	1	2	3	4	5	6	7	day	week	month	
Hot dogs	2 dogs	S M L	none	1	2	3	4	5	6	7	day	week	month	
Ham, lunch meats	2 slices	S M L	none	1	2	3	4	5	6	7	day	week	month	
Vegetable soup, vegetable beef, minestrone, tomato soup	1 med. bowl	S M L	none	1	2	3	4	5	6	7	day	week	month	
<b>MEAT, LUNCH ITEMS EATEN MORE THAN SEVEN TIMES A DAY</b>														
1		S M L	8	9	10	11	12	13	14	15	16	17	18	19
2		S M L	8	9	10	11	12	13	14	15	16	17	18	19
<b>BREAKFAST FOODS</b>														
High fiber, bran or granola cereals, shredded wheat	1 med. bowl	S M L	none	1	2	3	4	5	6	7	day	week	month	
Highly fortified cereals, such as Product 19, Total or Most	1 med. bowl	S M L	none	1	2	3	4	5	6	7	day	week	month	
Other cold cereals, such as Corn Flakes, Rice Krispies	1 med. bowl	S M L	none	1	2	3	4	5	6	7	day	week	month	
Cooked cereals	1 med. bowl	S M L	none	1	2	3	4	5	6	7	day	week	month	
Eggs (1 egg = small serv)	2 eggs	S M L	none	1	2	3	4	5	6	7	day	week	month	
Bacon	2 slices	S M L	none	1	2	3	4	5	6	7	day	week	month	
Sausage	2 patties/links	S M L	none	1	2	3	4	5	6	7	day	week	month	
<b>BREAKFAST FOODS EATEN MORE THAN SEVEN TIMES A DAY</b>														
3		S M L	8	9	10	11	12	13	14	15	16	17	18	19
4		S M L	8	9	10	11	12	13	14	15	16	17	18	19

PLEASE DO NOT WRITE IN THIS BOX

0 1 2 3 4 5 6 7 8 9	0 1 2 3 4 5 6 7 8 9	0 1 2 3 4 5 6 7 8 9	0 1 2 3 4 5 6 7 8 9
1	2	3	4

	MEDIUM SERVING	YOUR SERVING	NUMBER OF TIMES:							PER:				
BREADS, SALTY SNACKS, SPREADS		S M L	none	1	2	3	4	5	6	7	day	week	month	
White bread (including sandwiches), bagels, etc., crackers	2 slices, 3 crackers	<input type="radio"/> <input type="radio"/> <input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
Dark bread, including whole wheat, rye, pumpernickel	2 slices	<input type="radio"/> <input type="radio"/> <input type="radio"/>												
Corn bread, corn muffins, corn tortillas	1 med. piece	<input type="radio"/> <input type="radio"/> <input type="radio"/>												
Salty snacks (chips, popcorn, etc.)	2 handfuls	<input type="radio"/> <input type="radio"/> <input type="radio"/>												
Peanuts, peanut butter	2 Tablespoon	<input type="radio"/> <input type="radio"/> <input type="radio"/>												
Margarine on bread or rolls	2 pats	<input type="radio"/> <input type="radio"/> <input type="radio"/>												
Butter on bread or rolls	2 pats	<input type="radio"/> <input type="radio"/> <input type="radio"/>												
<b>BREADS, ETC. EATEN MORE THAN SEVEN TIMES A DAY</b>		S M L	NUMBER OF TIMES PER DAY:											
1		<input type="radio"/> <input type="radio"/> <input type="radio"/>												
2		<input type="radio"/> <input type="radio"/> <input type="radio"/>												
3		<input type="radio"/> <input type="radio"/> <input type="radio"/>												
4		<input type="radio"/> <input type="radio"/> <input type="radio"/>												
<b>SWEETS</b>		S M L	none	1	2	3	4	5	6	7	day	week	month	
Ice cream	1 scoop	<input type="radio"/> <input type="radio"/> <input type="radio"/>												
Doughnuts, cookies, cakes, pastry	1pc or 3 cook	<input type="radio"/> <input type="radio"/> <input type="radio"/>												
Pies	1 med. slice	<input type="radio"/> <input type="radio"/> <input type="radio"/>												
Chocolate candy	sm bar / 1oz	<input type="radio"/> <input type="radio"/> <input type="radio"/>												
<b>SWEETS EATEN MORE THAN SEVEN TIMES A DAY</b>		S M L	8	9	10	11	12	13	14	15	16	17	18	19
5		<input type="radio"/> <input type="radio"/> <input type="radio"/>												
6		<input type="radio"/> <input type="radio"/> <input type="radio"/>												

0 1 2 3 4 5 6 7 8 9	0 1 2 3 4 5 6 7 8 9	PLEASE DO NOT WRITE IN THIS BOX											
<input type="radio"/>	<input type="radio"/>												
0 1 2 3 4 5 6 7 8 9	0 1 2 3 4 5 6 7 8 9	0 1 2 3 4 5 6 7 8 9	0 1 2 3 4 5 6 7 8 9	0 1 2 3 4 5 6 7 8 9	0 1 2 3 4 5 6 7 8 9	0 1 2 3 4 5 6 7 8 9	0 1 2 3 4 5 6 7 8 9	0 1 2 3 4 5 6 7 8 9	0 1 2 3 4 5 6 7 8 9	0 1 2 3 4 5 6 7 8 9	0 1 2 3 4 5 6 7 8 9	0 1 2 3 4 5 6 7 8 9	0 1 2 3 4 5 6 7 8 9
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3	4	5	6	7	8	9	10	11	12	13	14	15	16

	MEDIUM SERVING	YOUR SERVING	NUMBER OF TIMES:							PER:					
DAIRY PRODUCTS, BEVERAGES		S M L	none	1	2	3	4	5	6	7	day	week	month		
Cheeses and cheese spreads, not including cottage cheese	2 slices or 2oz														
Whole milk and beverages with whole milk (not incl. on cereal)	8oz glass														
2% milk and beverages with 2% milk (not including on cereal)	8oz glass														
Skim milk, 1% milk or butter- milk (not including on cereal)	8oz glass														
Regular soft drinks (not diet)	12oz can														
Beer	12oz can														
Wine	1 med. glass														
Liquor	1 shot														
Milk or cream in coffee or tea	1 Tablespoon														
Sugar in coffee or tea, or on cereal	2 teaspoon														
DAIRY, BEVERAGES EATEN MORE THAN SEVEN TIMES A DAY			S M L	NUMBER OF TIMES PER DAY:											
1				8	9	10	11	12	13	14	15	16	17	18	19
2															
3															
4															

PLEASE DO NOT WRITE IN THIS BOX

0 1 2 3 4 5 6 7 8 9

0 1 2 3 4 5 6 7 8 9

0 1 2 3 4 5 6 7 8 9

0 1 2 3 4 5 6 7 8 9

1															
---	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

2															
---	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

3															
---	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

4															
---	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

The following questions are about your eating habits during the past three months.

9. How often do you eat the skin on chicken?  Seldom/Never  Sometimes  Often/Always

How often do you eat the fat on meat?  Seldom/Never  Sometimes  Often/Always

How often do you add salt to your food?  Seldom/Never  Sometimes  Often/Always

How often do you add pepper to your food?  Seldom/Never  Sometimes  Often/Always

10. Not counting salad or potatoes, about how many servings of vegetables do you eat per day or per week?

VEGETABLES      none    1    2    3    4    5    6    7    8    9    per DAY or WEEK

11. Not counting juices, about how many pieces of fruit do you eat per day or per week?

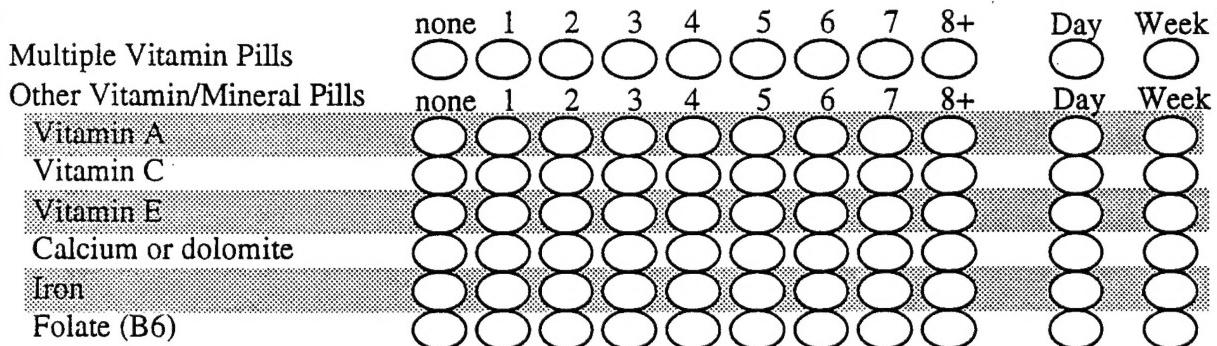
FRUITS      none    1    2    3    4    5    6    7    8    9    per DAY or WEEK

12. Have you taken any vitamins or minerals in the past three months?

NO

YES, fairly regularly  YES, but not regularly If YES:

If YES, please indicate the type and number of pills per Day or Week.



For the Other Vitamins, please indicate below how many milligrams or IUs per pill you take.

Vitamin A \_\_\_\_\_ IU per pill  
 Vitamin C \_\_\_\_\_ mg per pill  
 Vitamin E \_\_\_\_\_ IU per pill  
 Calcium or dolomite \_\_\_\_\_ mg per pill  
 Iron \_\_\_\_\_ mg per pill  
 Folate (B6) \_\_\_\_\_ mg per pill

Other Supplements (please fill in all that apply)

Yeast       Zinc      Cod Liver Oil  
 Selenium       Beta-Carotene       Other: \_\_\_\_\_

Please list the brand and type of multiple vitamin/mineral you usually take: \_\_\_\_\_

Please take a moment to fill in any questions you may have skipped. Thank you for taking the time to fill out this information.

PLEASE DO NOT WRITE IN THIS BOX

0 1 2 3 4 5 6 7 8 9

other

0 1 2 3 4 5 6 7 8 9

vitamins

Subject Number:

0 1 2 3 4 5 6 7 8 9

A

0 1 2 3 4 5 6 7 8 9

C

0 1 2 3 4 5 6 7 8 9

E

0 1 2 3 4 5 6 7 8 9

Ca